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## **ALERT PROGRAM® LITERATURE AND RESEARCH: Published Literature, Research, and Resources**

*TherapyWorks, Inc. (TWI) is committed to providing consumers with available evidence, research, and published literature related to the Alert Program®. We hope that families and practitioners will find this published information and objective data helpful to support appropriate use and application of the Alert Program®. This document is updated regularly. The following list of literature, articles and research is organized into four major sections:*

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## SECTION I References Specifically Addressing the Alert Program®

### A. Refereed Professional Journals

Barnes, K.J., Beck, A.J., Vogel, K.A., Grice, K.O., & Murphy, D. (2003). Perceptions regarding school-based occupational therapy for children with emotional disturbances. *American Journal of Occupational Therapy, 57*, 337-341.

*Comment:* This study examines the appropriateness, extent and types of services provided by occupational therapists to children with emotional disturbances in public schools. Eighty-seven percent of all respondents supported school OT for students with emotional disturbances. The most commonly reported intervention was sensory integration with nearly 47% using the Alert Program® individually and in groups.

Barnes, K. J., Vogel, K. A., Beck, A. J., Schoenfeld, H. B. & Owen, S. V. (2008). Self-regulation strategies of children with emotional disturbance, *Physical & Occupational Therapy In Pediatrics, 28:4*, 369-387.

*Comment:* An 8-week-long use of the Alert Program® within the classroom setting for 7 children with emotional disturbances demonstrated improvement on all measures as compared to the control group.

Bertrand, J. (2009). Interventions for children with fetal alcohol spectrum disorders (FASDs): Overview of findings for five innovative research projects. *Research in Developmental Disabilities, 30*, 986-1006.

*Comment:* This article provides a general intervention framework for individuals with fetal alcohol spectrum disorders (FAS), and the methods and general findings of five specific intervention research studies conducted within this framework. One study, conducted by Children's Research Triangle of Chicago, developed and evaluated a program of neuro-cognitive habilitation, adapted from the Alert Program®. Results from the 78 children and families studied, suggest the Alert Program® as a promising approach for helping children with FAS improve their self-regulation and executive functioning skills.

Cohn, E.S., Kramer, J., Schub, J.A. & May-Benson, T. (2014). Parent's explanatory models and hopes for outcomes of occupational therapy using a sensory integration approach. *American Journal of Occupational Therapy, 68*, 454-462.

*Comment:* The importance of parents' perspectives in identifying and addressing concerns and goals of children who receive occupational therapy using a sensory integration approach was the focus of this research. Two hundred and seventy-five parents, seeking intervention for their children ages 4-11 years of age responded to open-ended questions designed to elicit their hopes and goals for their children's therapy. Four categories were identified: 1) self-regulation (72%); 2) social participation (42%); motor skills ((40%); and, confidence (39%). Self-regulation was a prominent and overarching concern. The Alert Program® was identified as an intervention to help children self-monitor and self-evaluate performance.

Colangelo, C. (2008). Test Drive: Introducing the Alert Program® through song (Reviews, Tidbits and Tools). *Journal of Occupational Therapy, Schools, & Early Intervention, 1:1*, 70-71.

*Comment:* The author provides a review of the publication "Test Drive: Introducing the Alert Program® through Song". From extensive experience as a school-based therapist, the author shares her perspectives on the value and use of the Alert Program® with a school-aged population.

Fitzgerald, B. & MacCobb, S. (2017). An occupational therapy and teaching partnership: Applying a scholarship of practice model. *Occupational Therapy in Health Care, 31:3*, 270-282.

*Comment:* This paper describes an interdisciplinary process of adopting a scholarship of practice approach to generate evidence for intervention programs for students with social, emotional and behavioral difficulties (SEBD). This practice model involved the collaboration between an academic Occupational Therapy Department in an Irish university, Trinity College Dublin, and a support service in the national Department of Education. An initial two-phase process of adapting the Alert Program® for use in the classroom, resulted in positive outcomes and the development of yet another program

for intensive movement intervention (Movement Matters) for a proportion of the more compromised students whose needs were not adequately being met in the classroom setting. This paper demonstrates the value of a scholarship of practice model incorporating evidence based practice from the literature, clinical reasoning by advanced practitioners, and practice based evidence generated in the field.

Martin, B.A., & Suane, S.N. (2012). Effect of training on sensory room and cart usage. *Occupational Therapy in Mental Health, 28:2*. 118-128

*Comment:* This study focuses on the importance of education in engaging staff and clients in a program facilitating self-regulation. The authors of this study assessed the effectiveness of education on the consistency of use of sensory rooms within a large mental health facility. Eleven staff and thirty-six clients participated. Results were significantly significant in supporting the effectiveness of training using hands-on, population specific strategies.

Martini, R., Cramm, H., Egan, M., & Sikora, L. (2016). Scoping review of self-regulation: What are occupational therapists talking about? *American Journal of Occupational Therapy, 70*, 7006290010p1-15. <http://dx.doi.org/10.5014/ajot.2016.020362>

*Comment:* The results of this study provide an overview of the concept of self-regulation within the occupational therapy research and practice literature. Because this term, "self-regulation" is widely used by multiple disciplines, there appears to be diverse interpretations and meanings making intra- and inter-disciplinary discussions and interventions challenging. This article traces the history of the concept of "self-regulation" and then focuses on how this term is used by occupational therapists in research and practice literature. 58 articles were reviewed and within 7 of these articles, the Alert Program® was the therapeutic tool of choice. Authors outline importance of their findings for both practice and future research. This is an important article to help practitioners understand the varied levels and theoretical frameworks related to the concept of "self-regulation".

Mac Cobb, S., Fitzgerald, B. & Lanigan-O'Keefe, C. (2014). The Alert Program for self-management of behavior in second level schools: results of phase 1 of a pilot study, *Emotional and Behavioural Difficulties, 19:4*, 410-425. Retrieved from <http://dx.doi.org/10.1080/13632752.2014.903593>

*Comment:* Eighty-five students (aged 12-13 years) and four teachers were involved in this study. The students were from schools in areas of social disadvantage (in Ireland) and presented with challenging social, emotional, behavioral, and learning difficulties. The Alert Program® was used as a framework for the study. This first phase was occupational therapist led with class teacher support. Students gained an understanding of their challenging behaviors and identified strategies to support themselves in the classroom. The group of students perceived to be the most challenging gave the most positive scores, and 100% of these students indicated an intention to use their new strategies in class. Positive results of this study have lead to the second phase where teachers take the lead role.

Mac Cobb, S., Fitzgerald, B., Lanigan-O'Keefe, C., Irwin, N., & Mellerick, N. (2014). Students with social, emotional, and behavioral difficulties: The Alert Program trial in post-primary schools. *Journal of Occupational Therapy, Schools, & Early Intervention, 7:2*, 106-119. Retrieved from <http://dx.doi.org/10.1080/19411243.2014.930606>

*Comment:* This article describes the collaborative project involving teachers and occupational therapists in implementing an adapted version of the Alert Program® in four Irish schools in areas of social disadvantage during the 2011-2012 academic year. Eighty-five students participated with positive results. Reportedly, the most challenging students were the most positive about the program. Self-management was enhanced resulting in greater self-efficacy in those students with a history of low achievement in school. A whole-school approach was recommended based on the positive results obtained.

**\*\*Just added** Nash, K., Stevens, S., Clairman, H., & Rovet, J. (2018). Preliminary findings that a targeted intervention leads to altered brain function in children with fetal alcohol spectrum disorder. *Brain Science. 8. 7.*

*Comment:* Previous research has shown that the Alert Program® has improved behavioral regulation and executive functioning (specifically self-regulation) in children with emotional problems. This study asks if the Alert Program® also leads to improved neural functioning in associated regions. Twenty-one children with

FASD, ages 8-12 years, were included in this randomized treatment/control design study with pre-test and post-test measurements using a Go-NoGo functional magnetic resonance imaging (fMRI). Findings suggest the treated FASD groups were starting to resemble children never exposed prenatally to alcohol---possibly implying more mature neural integrity. These findings provide evidence that the Alert Program®, targeting behavioral dysregulation, a core feature of FASD, also yields positive change in critical brain regions underlying this ability.

Nash, K., Stevens, S., Greenbaum, R., Weiner, J., Koren, G., & Rovet, J. (2015). Improving executive functioning in children with fetal alcohol spectrum disorders. *Child Neuropsychology, 21*, 191-209.

*Comment:* This study examines whether the Alert Program® would produce improvements in self-regulation in children with FASD and whether this improvement would generalize to other aspects of executive functions, behavior and social skills. Twenty-five children were divided into two groups: 1) immediate treatment group, or 2) delayed treatment control group. Parents of the immediate treatment group reported improved behavioral and emotional regulation, and reduced externalizing behavior. It was concluded that executive functioning in children with FASD can be improved when self-regulation skills are addressed.

\*\*Just added

Soh, D.W., Skocic, J., Nash, K., Stevens, S., Turner, G.R., & Rovet, J. (2015). Self-regulation therapy increases frontal gray matter in children with fetal alcohol spectrum disorder; evaluation by voxel-based morphometry. *Frontiers in Human Neuroscience, 9*, 108.

*Comment:* This study is one of the first to identify change in brain structure of 29 children with FASD, following a 14 week intervention program using the Alert Program®. Children with FASD, ages 8-12 years, who received treatment demonstrated changes in critical regions of the brain for self-regulation. Results suggest that intervention using the Alert Program® led to increased cortical gray matter and related improvements self-regulation skills including improved emotional and inhibitory control. This research offers preliminary hope for improving executive functioning skills in children with FASD utilizing the Alert Program. Additionally, this study demonstrates a successful procedure for measuring neurocognitive changes in the brain following clinical interventions.

Swaminathan, A. & Nandgaonkar, H P. (2016, September-December). Effect of fostering self-regulation in children with Attention Deficit Hyperactivity Disorder. *Indian Journal of Occupational Therapy, 48:3*, 43-48.

*Comment:* The authors examined the effect of fostering self-regulation in 10 children (ages 6-10) with ADHD. Using an AB study design, individual goals were set to improve self-regulatory abilities. A comprehensive occupational therapy program, based on Sensory Integration Principles incorporating components of the Alert Program®, was implemented. Achievement in fostering sensory, cognitive and social self-regulation in the children was measured in areas of decreased inattention/distractibility, improved on-task behaviors, improved social behaviors at home and school, and positive impact on parents and teachers.

Wagner, B., Fitzpatrick, J., Symons, M., Jirikowic, T., Cross, D., & Latimer, J. (2016). The development of a culturally appropriate school based intervention for Australian Aboriginal children living in remote communities: A formative evaluation of the Alert Program® intervention. *Australian Occupational Therapy Journal*, Retrieved from <http://dx.doi.org/10.1111/1440-1630.12352>

*Comment:* The author describes a three-phase formative process undertaken to design a culturally and contextually appropriate intervention program that addresses self-regulation issues with Aboriginal community school students in western Australia. The Alert Program® was adapted through a collaborative process that included occupational therapists, community members and teachers in rural Fitzroy Valley. The resultant modified intervention (delivery and evaluation) will ultimately be used to assess the impact of the Alert Program® on self-regulation, executive function skills and adaptive behaviors of children, many with a diagnosis of FASD.

Wells, A.M., Chasnoff, I.J., Schmidt, C.A., Telford, E., & Schwartz, L.D. (2012). Neurocognitive habilitation therapy for children with fetal alcohol spectrum disorders: An adaptation of the Alert Program®. *American Journal of Occupational Therapy, 66*, 24-34.

*Comment:* This study evaluates the effectiveness of a neurocognitive habilitation program, integrating components of the Alert Program® with interventions used in therapy for traumatic brain injury, for foster and

adoptive caregivers and their children who were prenatally exposed to alcohol. The program is grounded in the premise that difficulties with self-regulation contribute to the daily challenges experienced by this population of children. The study involved 40 children in the treatment group and 38 children in the control group (aged between 6 years to 11 years, 11 months). Results revealed that children in the intervention group demonstrated significant improvements in executive and emotional functioning when compared with the control group. This study provides information about sensory integration and executive functioning needs of children with prenatal alcohol exposure and explains a valuable role for occupational therapy in adapting the Alert Program® with this population while working with caregivers and families.

## B. Professional Newsletter/Magazines

AA Digest Staff. (2007, September/October). Interview: Meet the Alert Program® founders. *Autism-Asperger's Digest Magazine*, 42-43.

*Comment:* This article presents a summary of an AA Digest interview with the Alert Program® creators Sherry Shellenberger, OTR and Mary Sue Williams, OTR.

AA Digest Staff. (2002, May-June). Featured Book: Take Five! Staying alert at home and school. *Autism-Asperger's Digest Magazine*, 24-26.

*Comment:* The Take Five! publication is featured with portions of the text quoted and resources provided.

Argabrite Grove, R. E. (2002, March 25). Embracing our psychosocial roots. *OT Practice*, 21-25.

*Comment:* The Alert Program® is described as one of several valuable tools available to the OT when addressing psychosocial issues of a child in school-based practice.

Barnes, K., Schoenfeld, H., Garza, L., Johnson, D., & Tobias, L. (2005, June). Preliminary: Alert Program® for boys with emotional disturbances in the school setting. *American Occupational Therapy Association School System Special Interest Section Quarterly*, 12, 1-4.

*Comment:* This newsletter article presents results of a pilot study using the Alert Program® with children with emotional and sensory processing problems.

Bazyk, S. (2010, September 27). Promotion of positive mental health in children and youth with developmental disabilities. *OT Practice*, CE-1-8.

*Comment:* Presents opportunities for OT practitioner to provide activities that promote mental health in children and youth with developmental disabilities. An overview of strategies for promotion, prevention and intervention is presented. The use of the Alert Program® for promotion and prevention is suggested.

Bazyk, S., Schefkind, S., Brandeburger Shasby, S., Olson, L., Richman, J., & Gross, M. (2008) *FAQ on school mental health for school-based occupational therapy practitioners*. Retrieved from [www.aota.org/.../PracticeAreas/Pediatrics/Tools/FAQSchoolMH.aspx](http://www.aota.org/.../PracticeAreas/Pediatrics/Tools/FAQSchoolMH.aspx)

*Comment:* The role of the OT is described in advancing school mental health (SMH). The Alert Program® is presented as a sensory processing approach that assists practitioners in identifying sensory preferences and strategies to enhance attention, behavioral organization and everyday functioning.

Cahill, S.M. (2006). Classroom management for kids who won't sit still and other "bad apples". *Teaching Exceptional Children Plus*, 3(1) Article 6. Retrieved from <http://escholarship.bc.edu/education/tecpus/vol3/iss1/art6/>

*Comment:* Describes collaboration between a school-based occupational therapist and a veteran expert teacher in applying the Alert Program® to an entire classroom. It concludes with how the Alert Program® became an effective classroom management system.

Chinnock, L. & Matson, R. (2013, August). Sensory strategies. *OT News (UK)*, 36-37.

*Comment:* The authors describe the application of the Alert Program® within female rehabilitation psychiatric units in England. The initial pilot was targeted to a group of female patients with a diagnosis of personality disorder who exhibited self-harming behaviors. The authors describe the process of training OTs within a private mental health service and strategies for supporting the therapists' learning and confidence for

- implementing this approach within their respective facilities. While the introduction to this approach is still in its infancy, positive results have become increasingly apparent for patients and staff alike.
- Dolde, K. (2008, September). Sensory challenges and sensory solutions for children and caregivers. *News-line for Occupational Therapists & COTAs*, 7(9F). Retrieved from [www.news-line.com](http://www.news-line.com).
- Comment:* Describes an occupational therapist's, Christy Kennedy, OTR/L, application of the Alert Program® with children in her private practice in Decatur, Georgia. Anecdotal information provided.
- Feldman, J.S. (2012, August 13). Treating pre-adolescents with anxiety disorders: Using cognitive-behavioral and sensory-integrative approaches for self-regulation. *ADVANCE for Occupational Therapists*, 17.
- Comment:* This author presents a cognitive-behavioral and sensory integrative intervention approach that she has successfully applied to pre-adolescent children with a primary diagnosis of anxiety disorders. The modified Alert Program® and The Incredible 5-Point Scale by Kari Dunn Buron and Mitzi Curtis were found to be successful tools in helping these children gain critical self-knowledge and skills in dealing with self-regulation.
- Feldman, J.S. (2012, August 13). Treating pre-adolescents with anxiety disorders: A case study using sensory-motor interventions to teach 10-year-old Courtney to regulate her anxiety. *On-line Extras/ADVANCE for Occupational Therapists*. Retrieved from <http://occupational-therapy.advanceweb.com/Web-Extras/Online-Extras/Treating-Pre-Adolescents-with-Anxiety-Disorders.aspx>
- Comment:* This case study follows the August 13 *ADVANCE* print edition and provides an excellent description of the author's application of the Alert Program® concepts to a 10 year old child. The author shares how her intervention included the entire family and the importance of facilitating the use of therapeutic strategies at home, school and during leisure activities. This case demonstrates the role of occupational therapy (OT) in addressing self-regulation for this population and how OT can be an important piece of an integrated approach to helping children with an anxiety disorder.
- Kerr, T. (1995, March 6). How Does Your Engine Run?®. *ADVANCE for Occupational Therapists*, 12, 50.
- Comment:* Provides an overview of the Alert Program®, including the program's development and application.
- Laurel, M. (1997, August 18). Changing level of alertness to enhance life success. *ADVANCE for Speech-Language Pathologists & Audiologists*, 7, 10.
- Comment:* This article is written from a Speech and Language Pathologist's perspective and includes an overview of the *Alert Program*®.
- Laurel, M. (2000, March/April). Bringing sensory integration home: A parent perspective on the Alert Program® for Self Regulation. *Autism/Asperger's Digest Magazine*, 14-15.
- Comment:* Describes a touching story from a parent's perspective using the Alert Program®, along with a one-page summary of the program.
- Maas, C., Mason, R., & Candler, C. (2008, Oct. 20). "When I get mad..." An anger management and self-regulation group. *OT Practice*, 9-14.
- Comment:* Describes the development and outcome evaluation of a collaborative interdisciplinary anger management/self-regulation program implemented to a group of children in the public schools. The Alert Program®, was chosen due to its success with children who demonstrate sensory processing/modulation problems.
- Moran, J. & Motin, B. (2011, December 19). Ready, set, learn. *ADVANCE for Occupational Therapists*, 22-23.
- Comment:* The use of an adapted Alert Program® in a classroom environment is described with specific activities cited and the role of the occupational therapist identified. Special considerations and outcomes are presented.

Nalley, C. (2013). The engine that could: Since its humble beginning two decades ago the Alert Program has become an internationally recognized resource. *Advance for Occupational Therapy Practitioners*. Retrieved from <http://occupational-therapy.advanceweb.com/Editorial/Content/PrintFriendly.aspx?CC=263163>

*Comment:* Author provides an historical overview of the role and influence that the Alert Program® has had over the past two decades. Its humble beginnings, the basis for the program's success, the body of research that has emerged, international growth and future development are all addressed.

Pliscofsky, G. & Cashriel, C. (2006, Oct. 16). Playing together. *ADVANCE for Occupational Therapists*, 22-23.

*Comment:* Describes a preschool play therapy group where the Alert Program® was incorporated.

Rynaski, H. (1994, November 24). How Does Your Engine Run? *OT Week*, 8, 20-22.

*Comment:* Describes Williams and Shellenberger's work in the Gallup NM Public Schools, the development of the Alert Program® and an overview of the program.

Just Added

Sanders, H., Sears, A., & Apodaca, J. (2016, February). Sensory focused play and attachment: Interdisciplinary collaboration in treatment foster care. *American Occupational Therapy Association SIS Quarterly Practice Connections*, 1, 2-4.

*Comment:* This article describes a collaborative interdisciplinary program that developed a sensory-informed attachment therapy for children in treatment foster care. The goals included informing parents on the use of sensory modulation strategies (guided by the principles and concepts of the Alert Program®) to support co-regulation, modeling the use of sensory-rich attachment-based play for the parent and child, and providing the children with a structured, safe and supportive environment for play-based learning. More than 30 children, ranging from 3-12 years of age, were involved in summer sensory experiential group sessions. While no formal outcome measures were employed, anecdotal evidence from staff and families indicated increased attachment behaviors and increased use of sensory strategies to effectively co-regulate children at home and in the community.

Salls, J. & Bucey, J. (2003, March 10). Self-regulation strategies for middle school students. *OT Practice*, 11-16.

*Comment:* Describes incorporation of the Alert Program® into a middle school curriculum.

Samelstad, K. & Hacker, C. (1996, December 5). How Does Your Engine Run? *OT Week*, 10. 14-15.

*Comment:* Describes two occupational therapists' successful experiences using the Alert Program® in a Michigan school and in a North Carolina private practice.

Sarracino, T., Dell, L. & Milchick, S. (2002, January 14) Autism spectrum disorders: Integrating methodologies and team efforts. *OT Practice*, 13-17.

*Comment:* Highlights some of the key elements of strategies used by occupational therapists when working with children with autism. The Alert Program® was referenced as a means to help children maintain optimal levels of arousal and attention.

Schaefer, I. (2011, December 5). Check your engine. *ADVANCE for Occupational Therapy Practitioners*, 24.

*Comment:* The author describes an innovative educational strategy for communicating with the community. A description of a "sensory fair" implemented for a local school is provided and benefits for the endeavor are discussed.

Schoonover, J. (2002, September 16). Teaching social skills. In Y. Swinth & B. Hanft (eds), *School-based practice: Moving beyond 1:1 service delivery*. *OT Practice*, 18-19.

*Comment:* A case example is provided to demonstrate how the Alert Program® may be used to improve social skills of children in a school-based program.

Scott, K.W. (2010, June 28). My sensory world. *OT Practice*, 18-20.

Comment: Author emphasizes the important contribution of occupational therapy practitioners in helping clients learn and practice strategies to help regulate fragile nervous systems. The Alert Program® is introduced as a option for intervention.

Stancliff, B. (1998, December). OT can help parents and teachers deal with ADHD: Understanding the "whoops" children. *OT Practice*, 18-25.

Comment: Defines ADHD using a case study perspective. One of the treatment modalities discussed is the Alert Program®.

Williams, M.S. & Shellenberger, S. (1994, September). The Alert Program™ for self-regulation. *American Occupational Therapy Association Sensory Integration Special Interest Section Newsletter*, 17, 1-3.

Comment: This four page detailed article is designed to give occupational therapists a comprehensive summary of the Alert Program® and gives excerpts from the Leader's Guide and Introductory Booklet.

Williams, M.S. & Shellenberger, S. (2000, March). How Does Your Engine Run? The Alert Program™ for Self-Regulation. *Autism-Asperger's Digest Magazine*, 14.

Comment: Provides brief synopsis about the Alert Program® that precedes the article (same magazine) by Marci Laurel about the parent perspective on the Alert Program®.

Williams, M.S. & Shellenberger, S. (2002, May/June). Take Five! Staying alert at home and school. *Autism-Asperger's Digest Magazine*, 24-26.

Comment: This three-page article provides sample information about the Take Five! publication in a manner accessible to all readers.

Winkle, M. (2008, June 30). Using AAT in corrections and residential facilities. *OT Practice*, 20-22.

Comment: Describes the use of animal assisted therapy (AAT) in corrections facilities, residential treatment centers and reintegration centers. The author further describes how the Alert Program® is adapted to assist student trainees learn about themselves as well as their dog.

Zeidler, S. (2012, June 4). Sensory processing challenges in the schools: Learning "high," "low," and "just right" speeds. *OT Practice*, 14-19.

Comment: This article describes the implementation of a 6-week evidence-based self-regulation program at a suburban New York public elementary school. The study explored whether the Alert Program® was an effective school-based intervention for improving attention to task in seven students (ages 7-10) with self-regulation/attention difficulties. Results demonstrated a positive impact on the students' ability to stay focused in the classroom, increased the number and variety of sensory-based strategies used by students, and changed how teachers viewed the effectiveness of sensory-based strategies for improving students' attention to task.

### C. Books/Manuscripts/Professional Texts

Frick, S., Frick, R., Oetter, P. & Richter, E. (1996). *Discovering the developmental significance of the mouth: "Out of the mouth of babes"*. (p. 22). Stillwater, MN: PDP Press, Inc.

Comment: An extremely useful book that provides an overview of the therapeutic significance of the mouth for facilitating normal development, including self-regulation. The Alert Program® is introduced (page 22) as a resource for helping learn self-regulation.

Kramer, J.G. (1999). Sensory integration frame of reference: Theoretical base, function/dysfunction continua, and guide to evaluation. In *Frames of reference for pediatric occupational therapy*, 2<sup>nd</sup> ed. (pp. 119-204). Philadelphia, PA: Lippincott.

Comment: Provides a good overview of the Theory of Sensory Integration. Includes discussion of the use of the Alert Program® for children with sensory system modulation issues (p. 185).

Mauro, T. (2006). *The everything: Parent's guide to sensory integration disorder* (pp. 279-280). Avon, MA: F+W Publications, Inc.



Comment: This book contains information about the Alert Program® (chapter 24): Helping Children Manage Their Sensory Needs.

Muhlenhaupt, M. (2008). School-based practice: Enabling participation. In Crepeau, E.B., Cohn, W.S. & Boyt Schell, B.A., *Willard and Spackman's occupational therapy*, 11<sup>th</sup> ed. (pp. 890-895). Philadelphia: Lippincott Williams & Williams.

Comment: Using a case study (pp 894-895), the author demonstrates the use of the Alert Program® with a child in the school system.

Just Added

NBSS. (2015a). The Alert Program in Irish post-primary schools: A NBSS national study of a teacher facilitated self-regulation programme. Retrieved from [http://www.nbss.ie/sites/default/files/publications/alert\\_report2\\_cover\\_2.pdf](http://www.nbss.ie/sites/default/files/publications/alert_report2_cover_2.pdf).

Comment: Ireland's Department of Education and Skills created The National Behaviour Support Service (NBSS) to promote positive behavior and learning in the school. A model was developed to effectively address the behavioral needs as well as the social, emotional and academic needs of student, with interventions at different levels of intensity and support. In collaboration with Trinity College Dublin, a study on the implementation of the Alert Program® (AP) was conducted to capture the teacher and student perspectives on the program and its perceived relevance for students with social, emotional and behavioral difficulties. A cohort of 118 students and 32 teachers from 17 post-primary schools were involved. Both students and teachers found the AP to be a positive learning experience. Additionally, the AP contributed to the development and enhancement of classroom management strategies for supporting students' self-regulation. This document represents an effective program evaluation process for enhancement of services in the schools.

Just Added

NBSS. (2015b). *Movement matters: A NBSS Level 3 intervention to improve positive behavior for learning*. Retrieved from [http://www.nbss.ie/sites/default/files/publications/movement\\_matters\\_report\\_pdf](http://www.nbss.ie/sites/default/files/publications/movement_matters_report_pdf)

Comment: Movement Matters is an intensive, individualized multi-sensory movement program designed in response to multi-faceted needs of a small number of students who continue to experience difficulty in school (Ireland). This program emerged following the introduction of two other programs for this population, one being the Alert Program®. Movement Matters was designed to support students who present as inattentive, fidgety, hyperactive and/or restless in class. The program is composed of 20 sessions, run each day for 20 minutes individualized for one or two students at a time. It focuses on the proprioceptive and vestibular systems thus supporting sensory integration abilities. Both qualitative and quantitative data indicate that Movement Matters is an effective intervention for young people who experience difficulties staying on-task in the classroom.

Northern Territory Government Australia (2001). *Learning through the senses resource manual: The impact of sensory processing in the classroom*. Department of Health and Community Services: Northern Territory Government Australia.

Comment: Discusses the use of the Alert Program® superimposed onto another intervention model (pp. 16-21).

Oetter, P., Richter, E.W., & Frick, S.M. (1988). *M.O.R.E. Integrating the mouth with sensory and postural functions*. Hugo, MN: PDP Press, Inc.

Comment: This publication, based on the Theory of Sensory Integration, provides strong theoretical background, developmental issues, and strategies related to the suck, swallow, and breathe synchrony. The Alert Program® is introduced in the context of self-regulation (p. 27).

Parham, D. & Mailloux, Z. (2005). Sensory integration. In Case-Smith, J., *Occupational therapy for children*, 5<sup>th</sup> ed. (pp. 356-409). St. Louis, MO: Mosby.

Comment: Use of the Alert Program® is discussed in the assessment and consultation section (page 395).

Rotz, R. & Wright, S.D. (2005). *Fidget to focus--Outwit your boredom: sensory strategies for living with ADD*. Lincoln, NE: iUniverse.

Comment: The authors (clinical psychologists) share their experiences with children with ADD and sensory processing deficits. Authors advocate for occupational therapy and the Alert Program® (pp. 21-23).

Schneider, C.C. (2001). *Sensory Secrets: How to jump-start learning in children*. Siloam Springs, AR: Concerned Communications.

Comment: This publication addresses sensory processing deficits related to learning. A description of the Alert Program® and its value for children (p. 116) is provided.

Schwab, D. (1999). Reframing Perceptions: How Children with FAS/E Sense the World. In Mayer, L. (Ed.) *Living and working with fetal alcohol syndrome/effects*. Winnipeg: Interagency FAS/E Program.

Comment: Chapter describing sensory integration as it relates to individuals with fetal alcohol syndrome. Also introduces the Alert Program® as a valuable tool for use by individuals with fetal alcohol syndrome (pp. 79-82; 97-100).

Shanker, S. (2013). *Calm, alert, and learning: Classroom strategies for self-regulation*. (pp. 16-20). Don Mills, Ontario: Pearson Canada, Inc.

Comment: Grounded in original work of Stanley Greenspan, the author acknowledges the importance of self-regulation to a student's ability to succeed in the classroom. The development of self-regulation and its importance in providing the foundation for higher metacognitive functions is presented. The primary focus of this text is a look at self-regulation through an exploration of five domains as well as six critical elements to optimal self-regulation that can be applied in the classroom. The Alert Program® is described and demonstrated in relation to the most fundamental of domains—biological self-regulation. This text is an excellent resource for teachers and therapists alike.

Shellenberger, S. & Williams, M.S. (2002). "How does your engine run?"™: The Alert Program® for self-regulation. In A.G. Fisher, E.A. Murray, & A.C. Bundy (Eds.) *Sensory integration: Theory and practice* (pp. 342-345). Philadelphia, PA: F.A. Davis.

Comment: Within a text on the Theory of Sensory Integration, the authors present the Alert Program® in Chapter 14: Alternative and Complementary Programs for Intervention.

Smith-Roley, S. & Jacobs, S.E. (2008). Sensory integration. In Crepeau, E.B., Cohn, W.S. & Boyt-Schell, B.A., *Willard and Spackman's occupational therapy*, 11<sup>th</sup> ed. (pp.792-817). Philadelphia: Lippincott Williams & Williams.

Comment: The Alert Program® is listed as a complementary approach to traditional sensory integration methods (p. 805).

#### **D. Un-published Graduate Theses/Dissertations**

Abela, S. (2013). *The outcomes of the Alert Program® in a school setting and the perspectives of those involved*. Unpublished honours thesis, University of Malta. Msida, MSD. (contact: edwardab@onvol.net)

Comment: This thesis describes a qualitative approach to evaluating outcomes of the use of the Alert Program® in eight (8) 4<sup>th</sup> grade students (4 with ADHD and 4 with typical behavior). Additionally, perceptions of participating teachers, parents and students were documented. Results reported improvement in all 8 children's ability to work independently and follow instructions. Additionally, there was a reported major change in parent and teachers' perceptions and interpretations of behaviors that were otherwise thought to be distracting as well as an awareness of strategies to support children's attempts to self-regulate. Both parents and teachers expressed the need for more training and support in this area.

Boblitt, K. (2007). *Effectiveness of a teacher in-service for introducing sensory strategies in the general education classroom*. Unpublished master's thesis, San Jose State University. San Jose, California. (contact: kristy@boblitt.com)

Comment: Study evaluates the effectiveness of a 2 hour Alert Program® (AP) in-service on teacher's perception of AP interventions. Results suggested that teachers began to interpret children's behaviors related to inattention differently. Teachers perceived AP sensory strategies used to support self-regulation as being "effective".

Bowen, M., Cloutier, A., & Nichols, A. (2011). *The lived experience of OT practitioners using the Alert Program® with children with autism spectrum disorder*. Unpublished master's thesis, University of Southern Maine. Gorham, Maine. (Contact: Ashley\_Nichols@hotmail.com)

*Comment:* This qualitative research utilized a phenomenological approach with six occupational therapy practitioners to explore their perceptions of implementing the Alert Program® with a population of children diagnosed on the autism spectrum. Three significant themes emerged: 1) the importance of ownership and self-advocacy that the Alert Program® brings to both the children and adults involved; 2) the ease of use and carryover across environments; and 3) the value of the tool to therapists in providing a language that makes sense and the ability to adapt the tool to meet individual needs.

Chiodo, P.G. (2010). *Outcomes on attention with an implementation of the Alert Program® in a school-based setting*. Unpublished Evidence-Based Occupational Therapy Scholars Capstone, Chatham University. Pittsburgh, PA. (contact: pchiodotr@aol.com)

*Comment:* A program evaluation was completed on the implementation of the Alert Program® in self-contained language learning disability classrooms (first through third grades). Both quantitative and qualitative outcomes demonstrated an increase in the students' (sample size of 8) attention to task and a decrease in the amount of redirection required during activities. Additionally, results demonstrated an improved ability of the teachers to recognize the impact of sensory interventions on attention.

Clark, M.N., Pritchett, M.D., & Vandiver, A. L. (2011). *The effects of the Alert Program® on communication and interaction skills of adults with severe and persistent mental illness in a community mental health setting*. Unpublished master's thesis, Brenau University, Gainesville, Georgia. (contact: mnewkam@tiger.brenau.edu)

*Comment:* This study investigated the effects of the Alert Program® on communication and interaction skills of adults with severe and persistent mental illness. The sample of 8 adults was obtained from a community mental health setting. Findings of the study were found to be statistically significant with increased communication and interaction skills documented. Analysis of results indicated that the Alert Program® was the main contributing factor for increased scores. This has significant implications for OT in that it provides evidence that provision of sensory regulation techniques can help persons with mental illness to better attend and participate.

#### Just Added

Hui, C. (2013). *Using Occupational Performance Coaching to target teachers' perception of their own performance, satisfaction, and self-efficacy in supporting the self-regulation of their students: A pilot study*. Unpublished master's thesis, McGill University. Montreal, Quebec. (contact: huicaroline@gmail.com)

*Comment:* The author addressed the challenges of meeting the complex needs of regular (inclusive) elementary school classrooms by 11 teachers in Quebec, Canada. Many of the classroom students demonstrate disruptive classroom behaviors due to varied underlying diagnoses contributing to teacher stress, emotional exhaustion, burnout and teachers' decreased sense of self-efficacy. In viewing both the teacher and the student as "clients" the occupational therapist measured results from implementing focused strategies for improving teacher performance, satisfaction and self-efficacy. Specifically, the study examined the extent to which a one day workshop, related to fostering students' self-regulation competencies (Alert Program®), followed by eight Occupational Performance Coaching (OPC) sessions over a 13.7 week period might improve the teachers' perceptions of their occupational roles. Results reflected teachers experiencing improved performance (82%), improved perceived satisfaction (91%), and improved sense of self-efficacy (73%).

Link, C.C., Parkman, C.D., & Frame, H.R. (2012). *The effects of the Alert Program® on the communication and interaction skills of adults with developmental disabilities (DD) who display atypical sensory processing during group activities*. Unpublished master's thesis, Brenau University. Gainesville, Georgia. (contact: thesis advisor jallison@brenau.edu)

*Comment:* This study used a single-subject semi-parametric ratio estimator (SPRE) design and involved 14 subjects with developmental disabilities who displayed atypical sensory processing abilities and resided in a community-based facility. Results supported the hypothesis that the use of the Alert Program® would increase or stabilize communication and interactions skills of this population during group activities.

Maddaleni, A.L. (2005). *The effects of the Alert Program® on attention and participation of children in inclusion classrooms*. Unpublished master's thesis, University of New Mexico.

- Albuquerque, New Mexico. (contact: amaddaleni@aol.com)
- Comment:* Study examines the effect of the Alert Program® on attention and participation of children, with self-regulation difficulties, in an inclusion classroom. Results suggest that the Alert Program® provides some benefits to children with arousal and attention difficulties.
- Oliver, J., Martin, L, Davis, G. & Scheerer, C. (2005). *Use of sensory-based techniques for increasing time on task in adults with mental retardation*. Unpublished thesis, Xavier University, Cincinnati, Ohio.
- Comment:* Study analyzes sensory strategies (adaptation of Alert Program®) for increasing time on task and work production in adults with mental retardation. Three case studies presented; increase in time on task and work production noted but not significantly.
- Prescott, S.L. (2002). *Measuring change in paediatric occupational therapy: The Alert Program®*. Unpublished BSc. Thesis, Queen Margaret University College, Edinburgh, Scotland. (contact: samanthaprescott@hotmail.com)
- Comment:* Study incorporated mixed methodology, using the Model of Human Occupation as a framework to evaluate the effectiveness of the Alert Program®. Results indicated improvement in several occupational performance areas, particularly at home.
- Quine-Smith, M. (2002). *Occupational therapy and literacy*. Unpublished master's thesis, University of New Mexico, Albuquerque, New Mexico. (contact:sensationtherapy@q.com)
- Comment:* Research focused on the role of school-based OT in literacy programs. A significant result of surveying OT's reflected that the Alert Program® was one of the two most widely used tools in school-based practice.
- Verno, B.E. (2008) *The effectiveness of the Alert Program® in the public schools as reported by occupational therapists*. Unpublished master's thesis, James Madison University. Harrisonburg, Virginia. (contact: becky.verno@gmail.com)
- Comment:* This study evaluated the effectiveness of the Alert Program® as perceived by occupational therapists. 96.6% of respondents reported that use of the AP improves students' ability to maintain attention to task during class activities.
- E. Popular Press**
- McCrary, A. (2003, September 8). Teacher uses inflatable ball chairs to help pupils stay focused on work. *Pensacola News Journal*. p. C9-8.
- Comment:* This article describes how a teacher incorporated information from the two day Alert Program® lecture to support students in her classroom.
- "How Does Your Engine Run?"® for Self-Regulation. *Families Online Magazine*. Retrieved from [www.FamiliesOnlineMagazine.com/alert-program.html](http://www.FamiliesOnlineMagazine.com/alert-program.html)
- Comment:* Families Online Magazine, which offers families help from parenting, health, and child development experts, provides an overview of the history and focus of the Alert Program®.
- McIlroy, A. (2011, May 27). Rewiring the brains of children with fetal alcohol syndrome. *Globe and Mail*. Retrieved from <http://www.theglobeandmail.com>
- Comment:* This is a newspaper article highlighting local research being done. The principles of the Alert Program® are applied in three classrooms for children with FASD at David Livingstone public school in Winnipeg. The Canadian Institutes of Health Research and Canadian Foundation on Fetal Alcohol Research funded this 12-week program, directed by researchers from Toronto's Hospital for Sick Children. Preliminary results are to be presented in September 2011.
- Mauro, T. (2006). Book Review: "How Does Your Engine Run?" The Alert Program™ for self-regulation. *About.com: Parenting Special Needs*. Retrieved from [www.SpecialChildren.About.com/od/sensoryintegration/gr/engineerun.htm](http://www.SpecialChildren.About.com/od/sensoryintegration/gr/engineerun.htm)
- Comment:* Provides a review of TherapyWorks, Inc. publication titled *An Introduction to "How Does Your Engine Run?"® "The Alert Program® for Self-Regulation"* (booklet).

Morris, M. Sensory diet vs. The Alert Program™ (“How Does Your Engine Run”): What’s the difference and how can they help my child? Retrieved from [www.Sensory-Processing-Disorder.com/how-does-your-engine-run.html](http://www.Sensory-Processing-Disorder.com/how-does-your-engine-run.html)

Comment: From a parent’s perspective, the author discusses the difference between a sensory diet (created by others) and the Alert Program® (teaching self-regulation)

Murphy, A.P. & Schultz, K. *Kids’ nasty habits are good. Nasty Habits: A Blessing in Disguise?* Retrieved from <http://abcnews.go.com/GMA/AmericanFamily/story?id=126358&page=1>

Comment: (Emphasis on “GENERAL” sensorimotor strategies). A lay-person’s introduction regarding children’s use of sensory strategies (hair twirling, sucking thumb, etc.) to a child’s ability to attend and self-regulate. The Alert Program® is specifically mentioned in this article.

## SECTION II

### Articles on the Effectiveness of Sensorimotor Strategies that Support Self-Regulation, Learning, and Living

The following articles are organized alphabetically with notes in the comment sections that correlate to the Alert Program<sup>®</sup>'s five ways to change alert levels: Mouth, Move, Touch, Look, and Listen.

#### A. Refereed Professional Journals

Abicoff, H. & Courtney, M.E. (1996). The effects of auditory stimulation on the arithmetic performance of children with ADHD and nondisabled children. *Journal of Learning Disabilities, 29:3*, 238-250.

*Comment: (Emphasis on "Listen" strategies).* This study examined the impact of using either music, speech or silence on arithmetic tasks by children diagnosed with ADHD and non-disabled children. Results indicate a significant increase in number of arithmetic problems attempted and in the number of correct answers for children with ADHD. This provides support for the prevalence of self-regulation issues (under-arousal/optimal stimulation theory) of ADHD.

Bagatel, N., Mirigliani, G., Patterson, C., Reyes, Y., Test, L., (2010). Effectiveness of therapy ball chairs on classroom participation in children with autism spectrum disorders. *American Journal of Occupational Therapy, 64*, 895-903.

*Comment: (Emphasis on "Move" strategies).* This single-subject design research examined the effectiveness of therapy ball chairs on classroom participation in 6 boys with autism spectrum disorder. The ball chair had the most significant impact on those boys who had the most vestibular-proprioceptive-seeking behaviors. Those children who demonstrated postural difficulties demonstrated least improvement in participatory behaviors. This research reinforces the need for skilled clinical reasoning and individualizing strategies for each child's unique needs.

Barros, R.M., Silver, E., & Stein, R.E. (2009). School recess and group classroom behavior. *Pediatrics, 123:2*, 431-436.

*Comment: (Emphasis on "Move" strategies).* Teacher's rating of classroom behavior was better for 8- to 9-year old children who experienced recess than those with none/minimal. These findings support importance of recess for learning and attention.

Brown, R.P., Gerbarg, P.L. (2005). Breathing in the treatment of stress, anxiety, and depression: Part I---Neurophysiologic model. *Journal of Alternative and Complementary Medicine, 11(1)*, 189-201.

*Comment: (Emphasis on "Mouth"/breathing strategies).* A model that focuses on yogic breathing as a unique method for balancing the autonomic nervous system and influencing psychological and stress-related disorders is presented. Neurological mechanisms contributing to the state of calm alertness are described.

Brown, R.P., Gerbarg, P.L. (2005). Sudarshan Kriya yogic breathing in the treatment of stress, anxiety, and depression: Part II--- Clinical applications and guidelines. *Journal of Alternative and Complementary Medicine, 11(4)*, 711-717.

*Comment: (Emphasis on "Mouth"/breathing strategies).* This study provides evidence to consider Sudarshan Kriya Yoga breathing as a potentially low-risk adjunct treatment. The power of yoga techniques in enhancing well-being, mood, attention, mental focus and stress tolerance is presented. The feasibility of integrating yoga breath techniques into school curricula is explored.

Bryan, L.C. & Gast, D.L. (2000). Teaching on-task and on-schedule behaviors to high-functioning children with autism via picture activity schedules. *Journal of Autism and Developmental Disorders, 30:6*, 553-567.

*Comment: (Emphasis on "Look" strategies).* This study emerges from the discipline of education and focuses on the use of visual prompting strategies to increase on-task and on-schedule behaviors for students with high-functioning autism. Results supported the use of graduated guidance procedure and picture-activity schedule teaching strategies in teaching students with autism to engage in on-

task and on-schedule behaviors. All of the four students involved in this study became more independent using the picture schedules and relied less upon adult prompting during literacy-based activities.

Cannella-Malone, H.I., Tullis, C.A., & Kazee, A.R. (2011). Using antecedent exercise to decrease challenging behavior in boys with developmental disabilities and an emotional disorder. *Journal of Positive Behavior Interventions, 13:4*. 230-239.

*Comment: (Emphasis on "Move" strategies).* This study evaluated the effectiveness of providing systematic exercise eight times per day in reducing challenging behaviors in a school environment. Results of the study demonstrate success of exercise in decreasing the frequency of challenging behavior to zero or near-zero levels in three students with moderate to severe developmental disabilities and an emotional disorder. Challenging behaviors decreased to zero for two participants and near zero for the third participant. Types of exercises are clearly described. Intrinsic motivation of students was noted. It also demonstrated how teaching staff is able to successfully implement and document the program across the entire day and across all school environments.

Cheng, M., Boggett-Carsjens, J. (2005). Consider sensory processing disorders in the explosive child: Case report and review. *Canadian Child and Adolescent Psychiatry Review, 14(2)*, 44-48.

*Comment: (Emphasis on "General Strategies").* Anecdotal evidence is presented suggesting that sensory processing disorders may potentially play a large role in children and youth demonstrating affect regulation problems (e.g. bipolar disorder, oppositional defiant disorder). This article presents a case report where diagnosis and management includes the development of a sensory diet. While not mentioned specifically, the Alert Program® provides a structured program to assist professionals in developing such a sensory diet and enhancing self-knowledge with this population. A narrative review of the literature is also provided.

Just Added

Črnčec, R., Wilson, S.J., & Margot, P. (2006, August). The cognitive and academic benefits of music to children: Facts and fiction. *Educational Psychology 26(4)*, 579-594.

*Comment: (Emphasis on "Listen" strategies).* This paper reviews the literature to examine evidence from three fields of experimental research relevant to the issues of whether music listening and instruction can improve non-musical cognitive and academic abilities in children. Research examined suggests that the Mozart effect (influence of focused music listening on task performance) cannot be reliably demonstrated in children. Music instruction demonstrates consistent benefits for spatiotemporal reasoning skills. Background music was reported to calm and focus children with special needs, thereby enhancing learning.

Davidson, C.W. & Powell, L.A. (1986). The effects of easy-listening background music on the on-task-performance of fifth-grade children. *Journal of Educational Research 80(1)*, 29-33.

*Comment: (Emphasis on "Listen" strategies).* The purpose of this study is to determine if easy-listening background music could be used to increase on-task-performance of children in a classroom setting. Twenty-six fifth grade students (15 boys; 11 girls) were observed during 42 class sessions over a period of four months. Results indicate that the use of easy-listening background music was effective in increasing on-task performance of the children with a greater effect observed in boys than girls (thought to be the result of a ceiling effect for girls).

Davis, C.L., Tomporowski, P.D., Boyle, C.A., Walter, J.L., Miller, P.H., Naglieri, J.A., & Gregoski, M. (2007). Effects of aerobic exercise on overweight children's cognitive functioning. *Research Quarterly for Exercise and Sport, 78:5*, 510-519.

*Comment: (Emphasis on "Move" strategies).* The study tests the effect of aerobic exercise on executive function in overweight children. Ninety-four overweight children ranging from 7-11 years of age were randomly assigned to three groups: 1) low-dose exercise; 2) high-dose exercise; or 3) no-exercise control group. The high-dose group demonstrated significantly greater on executive function processes (strategy generation & application, self-regulation, intentionality, & utilization of knowledge). This study provides additional evidence in support of the important role of the Alert Program®'s use of sensory-motor strategies for organizing higher level cognitive functioning.

Edelson, S.M., Edelson, M.G., Kerr, D.C.R., & Grandin, T. (1999). Behavioral and physiological effects of deep pressure on children with autism: A pilot study evaluating the efficacy of Grandin's hug machine. *American Journal of Occupational Therapy, 53*(2), 145-152.

*Comment: (Emphasis on "Touch/Deep Pressure" strategies).* This pilot study investigates the effects of deep pressure, using Grandin's Hug Machine, on children with autism. Twelve children with autism were randomly divided between two groups: those who received the Hug Machine twice a week for 6 weeks (experimental group), and those who did not (placebo group). Behavioral and physiological indicators of arousal were measured before and after deep pressure was provided. Results support previous reports that deep pressure appears beneficial for children with high levels of anxiety or arousal. Authors suggest that there may be a threshold of anxiety or arousal required for deep pressure to be beneficial.

Just Added

Erwin, H.E., Fedewa, A., Ahn, S., & Thornton, M. (2016). Elementary students' physical activity levels and behavior when using stability balls. *American Journal of Occupational Therapy, 7* (2), 700220010p1-7.

*Comment: (Emphasis on "Move" strategies).* The authors studied whether there were differences in physical activity levels between students who use stability ball and those who use chairs. Additionally, they examined whether the students exhibit higher levels of on-task behavior when using stability balls. All fourth-grade students from two classrooms participated in this study. One classroom was randomly assigned as the treatment group (n=23) and one classroom was randomly assigned to the control group (n=21). Each participant wore an actigraph accelerometer, an accurate and valid motion sensor for research with children. Results indicated that students were engaged in light intensity levels of physical activity while on stability balls and that this level did not appear to pose a distraction to teachers during instruction. Students seated on stability balls did not differ in on-task behavior from those using chairs; however, the authors state that short duration of the study may have had an effect. Because stability balls were found to not disrupt classroom activities, the authors encourage additional research with students who demonstrate high levels of inattention and hyperactivity.

Escalona, A., Field, T., Singer-Strunck, R., Cullen, C., & Harshorn, K. (2001). Brief report: Improvements in the behavior of children with autism following massage therapy. *Journal of Autism and Developmental Disorders, 31*:5, 513-516.

*Comment: (Emphasis on "Touch" strategies).* Twenty children (ages 3 to 6 years) were randomly assigned to massage and reading attention control groups. The massage group received 15 minutes of parent provided massage prior to bedtime every night for one month. The study results demonstrate significant improvements in off-task behavior and sleep problems, and children were noted to be more attentive at school. Stereotypical behaviors also decreased in the classroom and on the playground.

Evenson, K.R., Ballard, K., Lee, G., Ammerman, A. (2009). Implementation of a school-based state policy to increase physical activity. *School Health, 79*, 231-238.

*Comment: (Emphasis on "Move" strategies).* This article describes the outcome of the 2005 North Carolina State Board of Education policy to include a requirement for physical activity for kindergarten through eighth-grade students throughout the state. An on-line survey was conducted to explore how districts were meeting the physical activity-related portion of the policy and also to explore the implementation successes and challenges. Results indicated many positive results for both students and staff. Benefits identified were numerous with greater student focus and student alertness included.

Just Added

Fedewa, A., Davis, M.A.C., Ahn, S. (2015). Effects of stability balls on children's on-task behavior, academic achievement, and discipline referrals: A randomized



controlled trial. *American Occupational Therapy Association, 69*, 6902220020p1-9.

*Comment: (Emphasis on "Move" strategies)* The researchers used a randomized controlled design to evaluate the effect of using stability balls (67 second-grade students) on academic achievement and discipline referral levels and on (16 students) on-task behavior. Findings suggest that stability ball usage did not result in significantly greater on-task behavior or academic achievement. There was an overall decrease in discipline referrals for the treatment classrooms. It is suggested that stability balls provide needed physical activity (movement), which can increase positive classroom behaviors, fitness and mental health.

Fedewa, A., Erwin, H. (2011). Stability balls and students with attention and hyperactivity concerns: Implications for on-task and in-seat behavior. *American Journal of Occupational Therapy, 65*, 393-9.

*Comment: (Emphasis on "Move" strategies)*. Using a single-subject A-B research design, researchers evaluated the effects of stability balls on in-seat and on-task behavior of eight 4<sup>th</sup> & 5<sup>th</sup> grade students with attention and hyperactivity concerns. Results revealed increased levels of attention, decreased levels of hyperactivity, and increased time on task and in-seat/on ball time. This study provides additional evidence for the use of a movement strategy (via therapy ball) to support attention and learning.

Fenech, A. & Baker, M. (2008). Casual leisure and the sensory diet: A concept for improving quality of life in neuropalliative conditions. *NeuroRehabilitation, 23*, 369-376.

*Comment: (Emphasis on "General" strategies)*. These authors report two cases of adult individuals with neuropalliative conditions which, due to the complexity of these types of disabilities, often lead to passive lifestyles and spectator roles. The two case studies presented illustrate the development of casual lifestyles based on sensory profiles and tailored around the sensory diet framework. Results demonstrate the successful use of the sensory diet as a guide through which to plan leisure routines leading to an enhanced quality of life.

Fertel-Daly, D., Bedell, G., Hinojsa, J. (2001). Effects of a weighted vest on attention to task and self-stimulatory behaviors in preschoolers with pervasive developmental disorders. *American Journal of Occupational Therapy, 55*, 829-840.

*Comment: (Emphasis on "Move" /proprioception/heavy work/ strategies)*. This study examined the effectiveness of using weighted vests with preschool children with pervasive developmental disorders on attention and fine motor tasks. Results suggest that vests helped increase attention to task and decrease in self-stimulatory behaviors.

Foss-Feig, J.H., Tadin, D., Schauder, K.B., & Cascio, C.J. (2013). A substantial and unexpected enhancement of motion perception in autism. *The Journal of Neuroscience, 33*(19), 8243-8249.

*Comment: (Emphasis on "Move" strategies)*. This study, including 20 children with autism and 26 typically developing children, aged 8-17, investigates perception of motion. Results show that people with autism have enhanced visual abilities with heightened perception of motion. This outcome suggests that brains of individuals with autism keep responding more and more as intensity increases which can lead to sensory overload. This study supports the need for ongoing critical reasoning and problem solving by the practitioner in providing movement strategies for individuals with autism. Behavioral observations help determine the just right movement modality supportive of attention and learning.

Gallotta, M.C., Guidette, L., Franciوسي, E., Emerenziani, G.P., Bonavolonta, V., & Baldari, C. (2011). Effects of varying type of exertion on children's attention capacity. [Epub ahead of print]. *Medicine & Science in Sports & Exercise, August 1*.

*Comment: (Emphasis on "Move" strategies)*. The purpose of this study is to examine the effects of varying types of exertion on immediate attentional performance on 138 regular primary school boys

and girls. The three types of exertion: 1) physical exertion (primarily physical education/cardiovascular in nature); 2) cognitive exertion; and 3) cognitive and physical exertion.

Grandin, T. (1992). Calming effects of deep touch pressure in patients with autistic disorder, college students, and animals. *Journal of Child and Adolescent Psychopharmacology*, 2(1). Retrieved from <http://grandin.com/inc/squeeze.html>

*Comment: (Emphasis on deep pressure "Touch" strategies).* Temple Grandin provides an overview of the clinical effects of deep touch pressure and provides a description of her deep touch pressure device ("squeeze machine") that helped her overcome problems of oversensitivity to touch and that allays her nervousness. Additionally, she surveys animal literature on deep touch pressure, revealing similar calming reaction. She concludes with suggestions for clinical use with humans.

Hall, L., & Case-Smith, J. (2007). The effect of sound-based intervention on children with sensory processing disorders and visual-motor delays. *American Journal of Occupational Therapy*, 61, 209-215.

*Comment: (Emphasis on "Listening" strategies).* This study supports the use of therapeutic listening intervention coupled with a sensory diet to improve behaviors (including attention) of children related to sensory processing difficulties.

Hallam, S. & Price, J. (1998). Can the use of background music improve the behavior and academic performance of children with emotional and behavioral difficulties? *British Journal of Special Education* 25(2), 88-91.

*Comment: (Emphasis on "Listen" strategies).* The researchers examine the use of "calming" music in a class of children with emotional and behavioral challenges in hopes of improving behavior and performance in mathematics. The population included eight boys and two girls (n=10) attending a day school of children with emotional and behavioral difficulties (all normal IQ). All students performed better on the math tasks when background music was present. Those who benefited most were those whose difficulties were associated with constant stimulus seeking and over-activity behavior. Those who benefited least were reported by staff to have emotional problems related to identified history of abuse, separation and loss.

Hallam, S., Price, J., & Katsarou, G. (2002). The effects of background music on primary school pupils' task performance. *Educational Studies*, 28(2), 111-122.

*Comment: (Emphasis on "Listen" strategies).* This paper presents two studies that explore the effect of music on arithmetic and memory tasks of children aged 10-12. Findings suggest that the effects of music are mediated by arousal and mood versus affecting cognition directly. Practical applications are discussed for primary school and home.

Hillman, C.H., Pontifex, M.B., Castelli, D.M., Khan, N.A., Raine, L.B., Scudder, M.R., et al. (2014). Effects of the FITKids randomized controlled trial on executive control and brain function. *Pediatrics*, 134:4.

*Comment: (Emphasis on "Move" strategies).* This study, a randomized controlled trial, used behavioral and electrophysiological measures of brain function to demonstrate enhanced attentional inhibition and cognitive flexibility for improved childhood cognition and brain health. Two hundred twenty-one children (7-9 years of age) were randomly assigned to a 9-month afterschool physical activity program. Outcomes support the importance of physical activity for optimal executive function, including attention and alertness.

Holmes, R., Pellegrini, A., & Schmidt, S. (2006). The effects of different recess timing regimens on preschoolers' classroom attention. *Early Child Development and Care*, 176 (7), 735-743.

*Comment: (Emphasis on "Move" strategies).* This study explored the effects of different recess timing regimens on preschool students' attention in the classroom. Findings reveal that post-recess attention was greater following sustained outdoor play with girls demonstrating greater attention than boys. This study supports the need for movement--- specifically recess--- for bolstering children's sustained attention in the classroom.

Just Added

Johnson, A.J., Jenks, R., Miles, C., Albert, M., & Cox, M. (2011). Chewing gum moderates multi-task induced shifts in stress, mood, and alertness. A re-examination. *Appetite, 56*, 408-411.

Comment: (Emphasis on "Mouth" strategies). The finding of Scholey, et al., 2009, related to chewing gum and its ability to influence stress and mood changes following a multi-task cognitive stressor, was re-examined. Contrary to this earlier work, the findings of this study indicate that chewing gum fails to impact self-rated anxiety, calmness, and contentedness. However, the findings do contribute to the growing body of studies suggesting that chewing gum can improve alertness.

Johnson, A.J., Muneem, M., & Miles, C. (2013). Chewing gum benefits sustained attention in the absence of task degradation. *Nutritional Neuroscience, 16:4*, 153-9.

Comment: (Emphasis on "Mouth" strategies). This study examines the effects of chewing gum on sustained attention. Self-rated measures of alertness, contentedness and calmness were taken before and after a task. Results support results of past studies on the effects of chewing gum on attention with evidence that chewing gum can facilitate sustained attention and elevate perceptions of alertness.

Just Added

Johnston, C.A., Tyler, C., Stansberry, S.A., Moreno, J.P., and Foreyt, J.P. (2012). Brief report: Gum chewing affects standardized math scores in adolescents. *Journal of Adolescence, 35*, 455-459.

Comment: (Emphasis on "Mouth" strategies). The effects of gum chewing on standardized test scores and class grades of 108 eighth grade math students was examined. Students assigned to the gum chewing group demonstrated significantly higher math test scores when compared to students assigned to the no-gum group. Effects, however, were modest. The conclusions shared suggest that use of gum chewing is an easy and inexpensive strategy to support academic performance in schools.

Kercood, S., Grskovic, J.A., Lee, D.L., & Emmert, S. (2007). The effects of fine motor movement and tactile stimulation on the math problem solving of students with attention problems. *Journal of Behavioral Education, 16*, 303-310.

Comment: (Emphasis on "Touch" strategies). This study, employing a single-subject alternating treatments design, evaluated the effectiveness of fine motor (fidget) activity on students' ability to engage in math problem solving activities. Eight 4<sup>th</sup> & 5<sup>th</sup> grade students with attention problems participated. Results suggest that fine motor manipulation of a tactile stimulation object reduced excessive motor movement and increased task completion.

Kimball, J., Lynch, K., Stewart, K., Williams, N., Thomas, M., & Atwood, K. (2007). Using salivary cortisol to measure the effects of a Wilbarger protocol-based procedure on sympathetic arousal: A Pilot study. *American Journal of Occupational Therapy, 61*, 406-413.

Comment: (Emphasis on "Touch"/deep pressure strategies). This study investigated changes in salivary cortisol (stress hormone) following administration of the Wilbarger protocol to children diagnosed with sensory defensiveness.

Leveille, G., McMahon, K., Alcatara, E., & Zibell, S. (2008). Benefits of chewing gum: Oral health and beyond. *Nutrition Today, 43*(March/April), 75-81.

Comment: (Emphasis on "Mouth" strategies). Conclusions suggest that chewing gum may have a positive impact on cognitive function, specifically concentration and focus and weight management.

Lin, C-K, Min, Y-F, Chou, L-W, & Lin, C-K. (2012). Effectiveness of sensory processing strategies on activity level in inclusive preschool classrooms. *Neuropsychiatric Disease and Treatment, 2012:8*, 475-481.

Comment: (Emphasis on "General Strategies"). This study was conducted to measure whether sensory processing strategies could reduce excessive activity levels in children with sensory integration dysfunction. Thirty-six (36) subjects equally divided between the intervention and control groups and ranging in age from 36-72 months of age, were selected from kindergarten classrooms in three different towns of central Taiwan. Those children who ranked in the 73<sup>rd</sup> percentile or higher on the Test of Sensory Integration Function, who did not receive any sensory integration treatment during or before the study, and who could be matched to the intervention and control groups were included in the intervention group of the study. Although the treatment effect did not reach statistical significance, activity level improved in the intervention group. Results could not exclude a developmental effect over the 8-week session.

Mahar, M., Murphy, S., Rowe, D., et al. (2006) Effects of a classroom-based program on physical activity and on-task behavior. *Medical Science of Sports and Exercise*, 38(12). 2086-2094.

Comment: (Emphasis on "Move" strategies). This study evaluated the effects of a classroom-based physical activity program on children's in-school physical activity levels and on-task behavior during academic instruction. Results indicated significant improvements in directly observed on-task behavior. This behavior was particularly strong among the least on-task students with an increase in on-task behavior of 20% after participation in 10 minutes of physical activity. This study provides support for use of the Alert Program® MOVE strategies in supporting appropriate arousal and attention levels.

Just Added

Molholm, S., Ritter, W., Murray, M.M., Javitt, D.C., Schroeder, C.E., Foxe, J.J. (2002). Multisensory auditory-visual interactions during early sensory processing in humans: a high-density electrical mapping study. *Cognitive Brain Research*, 14, 115-128.

Comment: (Emphasis on General input). This scientific research study examines an important aspect of clinical practice when using a Sensory Integration (SI) clinical approach. Basic to the SI theory is that occupational performance requires the integration of information from multiple sensory modalities. Integration of information from multiple senses is basic to perception and cognition. Consequently, it can be said that a combination of sensory information has greater effect on function with regards to organization and CNS reaction time. This study examined the timing and topography of cortical auditory-visual interactions. Both visual and auditory sensations were presented alone and simultaneously and it was found that when presented simultaneously, response time was significantly faster than when stimuli were presented alone. This study contributes to the growing literature on the spatiotemporal properties of cortical multisensory processing in humans. Further research is needed to determine whether enhanced multisensory activity is unique to particular combinations of the senses. Additionally, the interaction of the individual with the environment and task also influences the power of the multisensory integration.

Mullen, M., Champagne, T., Krishnamurthy, S., Dickson, D., & Gao, R.X. (2008). Exploring the safety and therapeutic effects of deep pressure stimulation using a weighted blanket. *Occupational Therapy in Mental Health*, 24:1, 65-89.

Comment: (Emphasis on "Touch/Deep Pressure" strategies). This study provides the results of an initial exploratory study on the safety and effectiveness of using a 30 lb weighted blanket with 32 non-acute, non-hospitalized adults. Quantitative and qualitative metrics were piloted to determine use in future studies with adults during an acute inpatient mental health hospitalization and a non-acute, volunteer adult population subjected to a high anxiety task. Results indicate that the use of the 30 lb blanket has a calming effect for some adults. Results also highlighted limitations and future considerations for ongoing research in this area.

Pellegrini, A.D., Davis, P. (1995). The effects of recess timing on children's playground and classroom behaviors. *American Educational Research Journal*, 32, 845-864.

Comment: (Emphasis on "Move" strategies). Results indicate that students are less attentive and work less efficiently when confined to classrooms in continuous instruction time. Findings support importance of recess (movement) for student attentiveness in the classroom.

Peck, H.L., Kehle, T.J., Bray, M.A., & Theodore, L.A. (2005). Yoga as an intervention for children with attention problems. *School Psychology Review*, 34(3), 415-424.

Comment: (Emphasis on "General Strategies"). This study explored the effectiveness of yoga for improving time on task with 10 elementary school children with attentional problems. Activities implemented included physical postures, deep breathing and relaxation exercises. Results contribute to the existing literature on yoga's role in improving children's attention in school and suggest that yoga may become a promising alternative or complement to existing interventions for attentional difficulties.

Pfeiffer, B., Henry, A., Miller, S. & Witherell, S. (2008). The effectiveness of Disc 'O' Sit cushions on attention to task in second-grade students with attention difficulties. *American Journal of Occupational Therapy*, 62, 274-281.

Comment: (Emphasis on "Move" strategies). This randomized controlled trial design study investigated the effectiveness of a dynamic seating system for improving attention to task in 63 second grade students. The results provide preliminary evidence for the use of the Disc 'O' Sit cushion as an occupational therapy intervention to improve attention in the school setting.

Pfeiffer, B. & Kinnealey, M. (2003). Treatment of sensory defensiveness in adults. *Occupational Therapy International*, 10(3), 175-184.

Comment: (Emphasis on deep pressure "Touch & Move" strategies). This quasi-experimental pilot study demonstrates the effectiveness a self-treating lifestyle, including activities either daily or several times a week that provide proprioceptive, vestibular and/or tactile stimulation, on 15 adults who self-identified as having sensory defensiveness in one or more sensory systems. Results of the study provide significant support for the relationship between anxiety, attentional difficulties and sensory defensiveness in adults with no psychiatric diagnoses.

Rapport, M.D., Bolden, J., Kofler, M.J., Sarver, D.E., Raiker, J.S., Alderson, R.M. (2009). Hyperactivity in boys with attention-deficit/hyperactivity disorder (ADHD): A ubiquitous core symptom or manifestation of working memory deficits? *Journal of Abnormal Child Psychology*, 37, 521-534.

Comment: (Emphasis on "Move" strategies). Study investigates whether children's activity level is functionally related to working memory demands associated with executive functioning. Results support the use of movement to improve working memory and attention and suggest that behavioral programs to reduce movement may indeed be counterproductive to improving classroom performance.

Reynolds, S.J., Lane, S.J., & Mullen, B. (2015). Brief Report---Effects of deep pressure stimulation on physiological arousal. *American Journal of Occupational Therapy*, 69, 6903350010.

Comment: (Emphasis on "Move"/proprioception/heavy work strategies). This research focuses on the effects of deep pressure stimulation, applied through a Vayu Vest (Therapeutic Systems, Amherst, MA) on both performance and autonomic arousal in a normative adult sample of fifty individuals. Results support the use of deep pressure stimulation to change one's physiological arousal. Results provide further evidence for the use of deep pressure with people who experience difficulty with arousal regulation and sensory modulation during or in preparation for functional tasks.

Savan, A. (1999). The effect of background music on learning. *Psychology of Music* 27(2), 138-146.

Comment: (Emphasis on "Listen" strategies). The participants in this study included 10 boys aged 11-12 years identified as having special needs including emotional and behavioral difficulties. Only the orchestral compositions by Mozart that, were previously identified as producing statistically significant depressions of the systolic and diastolic blood pressure, pulse rate and body temperature, were used in this study. Seven different tapes, utilizing the same music compositions, but adulterated (i.e. speeded up, slowed down, played in reverse, adjusting frequencies) were each played during ten successive science lessons, each lasting 40 minutes. Music variations were evaluated for results. Results clearly suggest that there are qualities present, in certain Mozart orchestral compositions, that result in improved behaviors in additions to directly affecting the parameters of blood pressure, body temperature, and pulse rate.

Scheerer, C.R. (1992). Perspectives on an oral motor activity: The use of rubber tubing as a "chewy." *American Journal of Occupational Therapy*, 46(4), 344-352.

*Comment: (Emphasis on "Mouth" strategies).* Three case studies are presented that demonstrate the therapeutic benefits of a "chewy" (rubber tubing). Use of chewy seemed to have a calming, organizing, and focusing effect on the child. The included literature review provides supporting benefits of oral motor input to support attention and learning.

Schilling, D.L., Washington, K., Billingsley, F.F., & Deitz, J. (2003). Classroom seating for children with attention deficit hyperactivity disorder: Therapy balls versus chairs. *The American Journal of Occupational Therapy*, 57(5), 534-541.

*Comment: (Emphasis on "Move" strategies).* Study investigates the effects of therapy balls as classroom seating on a students in-seat behavior and legible word productivity. Results found that use of the therapy ball had potential to meet individual movement needs to help children achieve optimal state of arousal for attending and learning.

Schilling, D.L. & Schwartz, H.S. (2004). Alternative seating for children with autism spectrum disorder: Effects on classroom behavior. *Journal of Autism and Developmental Disorders*, 34, 423-431.

*Comment: (Emphasis on "Move" strategies).* A single-study withdrawal design was used to measure the effects of using therapy balls as seating on engagement and in-seat behavior of 4 children with Autism Spectrum Disorder (ASD). Findings indicated substantial improvement in both in-seat behavior and engagement across all four participants. Additionally, teachers and students reported a preference for therapy balls, versus other seating options.

Just Added

Schoen, S., Miller, L.J., & Sullivan. (2015). A pilot study of integrated listening systems for children with sensory processing problems. *Journal of Occupational Therapy, Schools, & Early Intervention*, 8:3, 256-276, <http://dx.doi.org/10.1080/19411243.2015.1055418>

*Comment: (Emphasis on "Listen" strategies).* This pilot study explored the effects of Integrated Listening Systems (iLs) for children with sensory processing impairments. Individual parent goals and perceptions were the repeated measure for outcomes. Analysis focused on physiological arousal. Improvement in home and school goals were observed suggesting that the iLs program would be a useful tool to support arousal behaviors for school and/or clinic-based intervention.

Just Added

Scholey, A., Haskell, C., Robertson, B., Kennedy, D., Milne, A., & Wetherell, M. (2009). Chewing gum alleviates negative mood and reduces cortisol during acute laboratory psychological stress. *Physiology & Behavior*, 9, 304-312.

*Comment: (Emphasis on "Mouth" strategies).* Authors of this study investigate whether chewing gum can ameliorate both self-rated affective states and hormonal changes (cortisol levels) associated with acute, laboratory psychological stress, thereby improving task performance. Forty healthy, non-smoking young adults participated. Extensive discussion of the various components of chewing gum and potential affects is provided. Data from this study suggest that, compared with the no chewing condition, chewing gum is associated with significantly higher alertness as well as reduced subjective stress and state anxiety with resultant positive effect on mood.

Just Added

Silva, L.M.T., Schalock, M., Ayres, R., Bunse, C., & Budden S. (2009). Qigong massage treatment for sensory and self-regulation problems in young children with autism: A randomized controlled trial. *American Journal of occupational Therapy*, 63, 423-432.

*Comment: (Emphasis on "Touch" strategies).* Article presents the results of a randomized controlled study evaluating the effect of Qigong massage directed toward improving sensory integrative dysfunction in children with autism. Of significance, the use of massage intervention resulted in improved ability of the child to socially orient and to remain calm while making the many transitions required by family and preschool life. Results are encouraging in support of massage as an easily administered strategy for treating sensory and self-regulation problems in children with autism.

Silva, L.M.T., Schalock, M., & Gabrielsen, K. (2011). Early intervention for autism with a parent-delivered Qigong massage program: A randomized controlled trial. *American Journal of Occupational Therapy, 65*, 550-559.

*Comment: (Emphasis on "Touch" strategies)* Following an earlier study resulting in positive outcomes from the trainer delivered Qigong Sensory Training treatment of young children with autism (Silva, L.M.T., et al, 2009), a randomized controlled trial was initiated involving parents in the treatment implementation. Forty-seven children were randomly assigned to treatment and control groups. Outcomes were evaluated in two settings--preschool and home. Results indicate significant improvement for treatment group participants with less improvement noted in more severely impaired students. Parents' improved confidence and sense of empowerment in providing intervention at home as well as notable change in their child were observed.

Smith, A. (2010). Effects of chewing gum on cognitive function, mood and physiology in stressed and non-stressed volunteers. *Nutritional Neuroscience, 13:1*, 7-16.

*Comment: (Emphasis on "Mouth" strategies).* This study involves 133 volunteers. Alertness and stress were measured by cortisol levels. Volunteers carried out tasks measuring a range of cognitive functions, including memory, selective and sustained attention, psychomotor speed and accuracy. Results support that chewing gum is associated with greater levels of alertness and a more positive mood. Reaction times were quicker, selective and sustained attention improved and heart rate and cortisol levels were higher when chewing, confirming the alerting effect of chewing gum.

Smith, A.L., Hoza, B., Linnea, K., McQuade, J.D., Tomb, M., Vaughn, A.J., et al. (2011, August 25). Pilot physical activity intervention reduces severity of ADHD symptoms in young children. *Journal of Attention Disorders*. Retrieved from <http://jad.sagepub.com/content/early/2011/08/25/1087054711417395>

*Comment: (Emphasis on "Move" strategies).* This pilot study examined the effects of a before-school physical activity (movement) on behaviors of 17 children (grades K-3) diagnosed with ADHD. Pilot results suggest that sustained involvement in physical activity benefits motor, cognitive, social and behavioral functioning in young peoples exhibiting ADHD symptoms. Parents, teachers and program staff reported overall improvement with most participants (64%-71%). Article's review of literature documents studies that support the use of physical activity on neurological functioning.

Stephens, R., Edelstyn, N. (2011). Do individual differences moderate the cognitive benefits of chewing gum? *Psychology, 2:8*, 834-840.

*Comment: (Emphasis on "Mouth" strategies).* This study investigates whether a person's individual differences underlie the cognitive benefits of chewing gum. This research replicated the null cognitive effects observed in several recent chewing gum experiments. However, this study helped identify individual differences where chewing gum is more likely to produce cognitive benefits: where people feel thirsty, in introverts, and where mental performance is sub-optimal. Cognitive benefits with chewing gum may occur through alleviation of stress and of thirst.

Stratton, J., & Gailfus, D. (1998). A new approach to substance abuse treatment. Adolescents and adults with ADHD. *Journal of Substance Abuse Treatment, 15(2)*, 89-94.

*Comment: (Emphasis on "General Strategies").* This author present issues of arousal often seen in adolescents and adults with substance abuse issues. Sensory-motor intervention strategies focusing on self-regulation/arousal result in patients feeling a sense of increased independence and responsibility for themselves. Following treatment, staff report that patients demonstrate improvement in anger control, reduced impulsivity, marked relaxation and reduced hyper-arousal and increased attention span during group activities. All patients who followed their sensory-motor intervention plans were able to successfully complete the chemical dependency treatment where previous behavioral issues prevented such.

Tucha, D., Mecklinger, L., Maier, K., Hammerl, M., Lange, KW. (2004). Chewing gum selectively improves memory in healthy volunteers." *Appetite, 38 (3)*, 235-236.

Comment: (Emphasis on "Mouth" strategies). A 58-person study found a significant positive effect of chewing gum on sustained attention, but not on improvement on participants' memory function.

Just Added

Umeda, C. & Deitz, J. (2011). Effects of therapy cushions on classroom behaviors of children with autism spectrum disorder. *American Journal of Occupational Therapy, 65*, 152-159.

Comment: (Emphasis on "Move" strategies) The effects of therapy cushions used by 2 kindergarten students with autism spectrum disorder (ASD) and sensory processing differences was evaluated. The data did not reveal substantial changes in sitting or task-related behavior for either student when sitting on a cushion. Analysis of sensory input provided by the cushion was provided to determine variables influencing outcomes.

VandenBerg, N.L. (2001). The use of a weighted vest to increase on-task behavior in children with attention difficulties. *American Journal of Occupational Therapy, 55*, 621-628.

Comment: (Emphasis on "Move" strategies). This study investigates the use of weighted vests on students' on-task classroom behavior. Results support the use of deep pressure via a weighted vest to increase on-task behavior for children with attentional difficulties.

Wahlstrom, K. (2002). Changing times: Findings from the first longitudinal study of later high school start times. *NASSP Bulletin, 86:633*, 3-21.

Comment: (Emphasis on "General Strategies"). Sleep is essential for the maintenance of all biological systems, including biochemical. Sleep helps balance the biochemistry of the body. This study provides evidence to link sleep patterns of adolescents to alertness, mood, peer-relationships and general academic and life competencies. The presented evidence encourages the practitioner to examine sleep patterns when working with adolescents who present with self-regulation difficulties. Addressing sleep routines may be a critical strategy for helping to organize the biochemistry of alertness.

White, B.P. & Mulligan, S.E. (2009). Application of psychobiological measures in occupational science and occupational therapy research. *Occupational Therapy Journal of Research, 29: 4*, 163-174.

Comment: (Emphasis on "General" research strategies). This study provides an overview of physiological measures or biomarkers that are beginning to be used by occupational therapy researchers in measuring the complexity and effects of stress, self-regulation and arousal systems on occupational performance. This article provides valuable information to support practitioners in understanding the occupational relevance of these physiological measures and thereby enhancing the ability to share this emerging body of research-based evidence with an interdisciplinary audience.

Wilkinson, L., Scholey, A., Wesnes, K. (2002). Chewing gum selectively improves aspects of memory in healthy volunteers. *Appetite, 38*, 235-236.

Comment: (Emphasis on "Mouth" strategies). A 75-person study showed that chewing gum appeared to improve people's ability to learn, retain and retrieve information.

Wilmes, B., Harrington, L., Kohler-Evans, P., & Sumpter, D. (2008). Coming to our senses: Incorporating brain research findings into classroom education. *The Education Digest, 128*, 659-666.

Comment: (Emphasis on "Look", "Listen" and olfaction strategies). This is an educator focused article on sensory-filled strategies based on brain research. Classroom strategies for teachers is provided with research summaries (no citations or references provided).



## B. Professional Newsletter/Magazines

Just Added

BC Center for Ability. (n.d.). The lunch box as a self-regulation tool. *Social Emotional Enhancement & Development: Clinical Perspectives*. Retrieved June 6, 2017, from <http://bccfa-seed.org/?page=34>.

*Comment:* (Emphasis on "Mouth" strategies) This publication provides a nice overview of self-regulation and its importance to daily routines. Special emphasis is on oral (Mouth) input. The reader is provided with suggestions and advice on how to use the lunch box as effective means for providing organizing "mouth" input for self-regulation.

Carley, K. (2013 March). Sound therapy: A complementary intervention for individuals with sensory integration and processing disorders, Part I. *Sensory Integration Special Interest Section Quarterly*, 36:1, 1-4.

*Comment:* (Emphasis on "Listen" strategies). This article, the first of a two-part series, presents the history as well as the neurological and theoretical foundations of sound therapy. The properties of sound therapy are described which helps guide a practitioner in integrating sound therapy programs into a sensory integration approach to intervention.

DeCleene, K. E. & Hayden-Sewall, A. A. (2007, December). Sound Therapy: How did it evolve and what is occupational therapy's role? *School System Special Interest Section Quarterly*, 14(4), 2.

*Comment:* (Emphasis on "Listen" strategies). Historical descriptions and summaries of sound therapy methods. It mentions self-regulation as a positive outcome of Therapeutic Listening™.

Just Added

Goldstein, K., Huang, S., & Tu, K. (June, 2013). Sensory modulation therapy quality assurance study. *Behavioral Health (Kings County Hospital Center/Behavioral Health Services)*, 4:12, 1-2.

*Comment:* (Emphasis on "General" sensory strategies). Three occupational therapy students observed and conducted their own sensory modulation groups in an in-patient behavioral health unit. In this newsletter article, they described their program as well as the quality assurance study that they also implemented. Results of the study reflected that the belief in the efficacy of Sensory modulation therapy as an effective treatment tool was unanimously positive.

Harper, J., Warner, A.L. (2010, January 4). Researching combined interventions: Effectively addressing attention and auditory processing in school-age children. *Advance OT Magazine*, pp. 27-28.

*Comment:* (Emphasis on "Listen" strategies). Preliminary electrophysiological findings of this study show a combination of sensorimotor therapy and sound intervention to be effective in treating children with auditory processing disorder and attention disorders.

Hoffman, S. (2011, January 31). Benefits of weighted products for managing sensory processing disorder. *Advance OT Magazine*, pp. 10-11.

*Comment:* (Emphasis on deep/pressure "Move" strategies). A COTA describes her experience using deep pressure from weighted products to benefit individuals with autism or a sensory processing disorder. The article provides case stories demonstrating effectiveness as well as providing protocols for implementation, precautions and contra-indications.

Just Added

Howell, M.K. (2016, February 22). Encouraging activity bursts in the classroom. *OT Practice*, 21-22.

*Comment:* (Emphasis on "Move" strategies). A movement-based instructional pilot program is discussed. Seven teachers participated in a program of "activity bursts" integrated into the daily classroom routine. Baseline data was collected and outcomes measured following 15 consecutive school days. Overall, teachers reported a reduction of lost instruction time due to behavior redirection, and improved student focus, behavior, and attention. Readers are directed to resources and manuals online.

Just Added

Kinnealey, M., Riuli, V., & Smith, S. (2015, March). Case study of an adult with sensory modulation disorder. *American Occupational Therapy Sensory Integration Special Section Quarterly*, 38, 1-4.

Comment: (Emphasis on "Touch", "Move" strategies) This study consisted of a single subject pre- and post-intervention research design. A 32 year old male, with symptoms of sensory modulation disorder (SMD), participated in a clinical assessment, followed by a three-part intervention process: 1) "detective" work by both subject and OT related to subject's sensory make-up, relationship to functional activities, and provision of general information to subject about sensory modulation; 2) provision of therapeutic activities including deep pressure tactile, vestibular and proprioceptive input (organizing in nature); and 3) aerobic activity that provided heavy proprioception and vestibular input. A consultation model was used as subject engaged in activities each day for 5 weeks. Results reflected behavioral changes that positively affected the subject's life. It was concluded that intervention that incorporates self-knowledge, self-advocacy, choice, control and therapeutic activities integrated into daily life seems to offer the most promise for individuals with SMD.

Just Added

Klemp, R. (2015, May) A little 'R and R'. *Advance for Occupational Therapy Practitioners*, 12-13.

Comment: (Emphasis on "General" strategies). The author, a mental health occupational therapist, describes a program designed to help foster care children calm down and self-regulate. These are children who, because of past trauma, have high needs and difficulty with their behavior. Using a sensory integration framework, the author evaluates the child in the foster home and creates a home program supportive of the child's emotional regulation, collaborating with foster care families.

May-Benson, T.A., Carley, K., Szklut, S., & Schoen, S. (2013 June). Sound therapy: A complementary intervention for individuals with sensory integration and processing disorders, Part II. *Sensory Integration Special Interest Section Quarterly*, 36:2, 1-4.

Comment: (Emphasis on "Listen" strategies). This article is the second of a two-part series focusing on sound therapy programs and how to apply these programs in occupational therapy practice. This article describes the most commonly used sound therapy programs, describes the pediatric populations that may benefit from such programs, examines the outcome effectiveness of cited programs, and finally, provides a case example.

Rice, M. *Bulk up the brain*. Retrieved August 16, 2011, from Advance for Physical Therapy and Rehab Medicine website: <http://physical-therapy.advanceweb.com/article/bulk-up-the-brain.aspx>

Comment: (Emphasis on "Move" strategies). This physical therapist (author) discusses the benefits of physical movement with regard to school performance. The role of physical and occupational therapists in consulting with teachers on how to bring movement into the classroom is discussed.

Schriber Orloff, S.N. (2010, December 6). Doodling: A boost to the brain. *Advance OT Magazine*, p. 9.

Comment: (Emphasis on "Touch" & "Move" strategies). This author is a teacher who later became an O.T. She addresses the importance of doodling in the support of attention. The article cites research supportive of doodling to increase attention in the classroom and helping children learn.

Spinabella, K. (2011, August 1). Stand up for good health. *Advance OT Magazine*, p. 14.

Comment: (Emphasis on "Move" strategies). Use of the standing desk in both regular education and special education is discussed. Multiple benefits include: 1) improved attention, focus and task completion; 2) comfort and ergonomically correct positioning; 3) calorie consumption and general promotion of health. Multiple studies are cited supporting benefits.

### C. Books/Manuscripts/Professional Texts

Trott, M.C. (2002). *Oh behave! Sensory processing and behavioral strategies*. Philadelphia: Therapy Skill Builders.

*Comment:* This publication reflects an extremely practical blend of behavioral and sensory approaches to address day-to-day functioning, including self-regulation.

### D. Unpublished Graduate Theses/Dissertations

Voytecki, K.S. (2005). *The effects of hand fidgets on the on-task behaviors of a middle school student with disabilities in an inclusive academic settings*. Unpublished doctoral dissertation, University of South Florida.

*Comment:* (Emphasis on "TOUCH" strategies). This single subject A-B-A-B design reports significant (40%) improvement in on-task behaviors and suggest, due to this preliminary study, that fidgets have promising implications for use with this population.

### E. Popular Press

Antoniades, C.B. (2010, March). The upside of fidgeting. *Parenting school years*. pp. 126-127.

*Comment:* (Emphasis on "Touch" strategies). Author describes study by Mark Rapport, PhD related to fidgeting as a support for under-aroused brain function and working memory. Author encourages parents to talk with teachers about acceptable levels of movement to support their children's learning.

Bernhardt, D. (March, 24, 2008). School on the run: Project combines workouts with study. *The StarPhoenix*. Retrieved from <http://johnratey.typepad.com/blog/2008/03/school-on-the-r.html>

*Comment:* (Emphasis on "Move" strategies). Canadian Teacher Allison Cameron integrates treadmills, stationary bicycles, and weightlifting into Grade 8 class instructions for special needs students. She found 20 minutes of exercise translated into 2 hours of sustained concentration from students. Disciplinary problems decreased (67%) and use of medications plummeted. Importantly, attendance and academic performance improved.

Brownlee, S. & Watson, T. (1997, January 13). The senses. *U.S. News & World Report*. 51-59.

*Comment:* (Emphasis on "General" sensorimotor strategies). In this popular press overview of the senses, authors discuss the importance of nurturing natural and uniquely individual sensory-motor capabilities and the effect of this nurturing on an individual's health, emotions, even intelligence. Results of research on individual sensory systems can enhance the practitioners understanding of self-regulation.

Cloud, J. (2009, April 13). Better learning through fidgeting. *Time Magazine*. 61.

*Comment:* (Emphasis on "Touch" strategies). Describes a recent study from University of Central Florida (UCF) that suggests that it is better to let children jiggle and fidget to facilitate learning. Suggests that children use movement the way adults use caffeine to stay focused.

CTV.ca News Staff (2006). Halifax school uses stability balls to calm kids. *CTV News*. Retrieved from <http://www.henryot.com/pdf/Halifax%20school%20uses%20stability%20balls%20to%20calm%20kids.pdf>

*Comment:* (Emphasis on "Move" strategies). This news article describes a 4<sup>th</sup> grade teacher's solution to fidgety, distracted and inattentive students. Replacing plastic desk chairs for therapy balls has been successful in increasing attention & concentration, improving posture, and helping burn calories. The school plans to purchase more balls to expand the experiment.

Morten, N. (2010, October 7) *Stand-up desks in college station school fighting obesity*. Retrieved from KBTX (CBS affiliate) television station website: <http://www.kbtx.com/news/headlines/104533704.html>

Comment: (Emphasis on "Move" strategies). This local College Station, Texas television station highlights a research project that focused on the benefit of using adjustable height stand-up desks in the classroom. The leading researcher, from Texas A&M Health Science Center School of Rural Public Health, found that students who used stand-up desks are not only burning calories, but also improving stamina while building a stronger attention span.

Parker-Pope, T. (2009, February 24). The 3 R's? A fourth is crucial, too: Recess. *The New York Times*

Comment: (Emphasis on "Move" strategies). Discussion regarding recent research by Dr. Romina Barros suggesting that play (including recess) can influence behavior, concentration and even grades.

Soussan, T. (2009, August 2). Young and restless: Fidget toys, other distractions can help some children pay better attention in class. *Albuquerque Journal*, (Special Back to School Section) pp. 9, 12.

Comment: (Emphasis on "Touch" strategies). Interviews with Albuquerque area therapists about using fidget toys to support attention.

Just Added

University of Illinois at Urbana-Champaign. (2009, April). Physical activity may strengthen children's ability to pay attention. *ScienceDaily*, Retrieved from <https://www.sciencedaily.com/releases/2009/03/090331183800.htm>

Comment: (Emphasis on "Move" strategies). Twenty 9-year-old children participated in this study. Following a short bout of walking, researchers found that children were able to focus and selectively and perform more accurately on tasks provided.

Veenendall, J. (2008). *Arnie and his school tools: Simple sensory solutions that build success*. Shawnee Mission, KS: Autism Asperger Publishing Company.

Comment: (Emphasis on "General" sensorimotor strategies). A children's storybook about Arnie and strategies he uses to help him focus and attend.

## SECTION III

## Select Articles on the Relationship of Self-Regulation to Learning

## A. Refereed Professional Journals

Blair, C. & Diamond, A. (2008). Biological processes in prevention and intervention: The promotion of self-regulation as a means of preventing school failure. *Development and Psychopathology, 20 (3)*, 899-911.

*Comment:* This paper examines the interrelationship between emotion and cognition and provides good evidence of the importance of self-regulation competency for successful learning and adaptation to school. A strength of the article is that it challenges the current focus of early childhood education on academic learning and emphasizes the importance of promoting emotional, attentional, and behavioral regulation in children as potentially more effective in promoting school success throughout the school years as well as throughout life. A weakness of the article is its emphasis on top-down approach and incomplete/dated neurobiological support.

Blair, C. & Razza, R.P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development, 78:2*, 647-663.

*Comment:* This study examines the role of self-regulation in emerging academic ability. Literature is cited that supports the central role of self-regulation to understanding how children adapt to and learn in the school setting. The results, although providing evidence related to the correlation between self-regulation and early academic ability, do have limitations due to the method of measurement utilized. The authors encourage further examination of the self-regulation construct, but yet the encourage promotion of academic achievement by fostering self-regulation.

Just Added

Boekaerts, M. & Corno, L. (2005). Self-Regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology: An International Review, 54(2)*, 199-231.

*Comment:* The authors, coming from the discipline and perspective of educational psychology, provide an overview of the concept of self-regulation and its relationship to learning. They stress that effective coping and self-management can be facilitated through intervention strategies that focus on the student's volition. This is compatible with the Alert Program®. The authors continue to provide a historical overview of assessment of self-regulation, the pros and cons of such tools and how these tools have changed as the definition of self-regulation has evolved into a more complex construct. Interventions common to their discipline are analyzed and presented. The authors conclude that classroom education, using the top-down and bottom up approaches, in conjunction with volitional strategies, can ultimately support optimal performance.

McClelland, M.M., Acock, A.C., Piccinin, A., Rhea, S.A., & Stallings, M.C. (2012). Relations between preschool attention span-persistence and age 25 educational outcomes. *Early Childhood Research Quarterly (in press)*.

*Comment:* This study explores relations between children's attention span-persistence in preschool and later school achievement and college completion. Results support that age 4 attention span-persistence skills significantly predicts the odds of completing college by age 25. The extensive review of literature in this article provides an in-depth overview of the growing body of evidence documenting the importance of self-regulation for long-term achievement and educational attainment.

Just Added

Pelco, L.E. & Reed-Victor, E. (2007, Spring). Self-regulation and learning-related social skills: Intervention ideas for elementary school students. *Preventing School Failure, 51:3*, 36-37.

*Comment:* The authors provide a review of research on individual differences in self-regulation and learning-related social skills. While the authors generally focus on social and cognitive self-regulation,

they do mention the connection between biologically based self-regulation (on which the Alert Program® focuses) and temperament and the link of these two with long-term academic and social outcomes. The article reinforces the need to address self-regulation in multiple contexts as well as the complex array of environmental variables (e.g. caregiver traits; family or community characteristics) and the need to collaborate with the adults in children's lives. Finally, the article provides a review of literature justifying the importance of self-regulation to learning and life.

Raver, C.C., Li-Grining, C., Bub, K., Jones, S.M., Zhai, F., & Pressler, E. (2011). CSRP's impact on low-income preschoolers' preacademic skills: Self-regulation as a mediating mechanism. *Child Development, 82:1*, 362-378.

*Comment:* The Chicago School Readiness Project (CSRP) evaluated low-income children's school readiness through the mediating mechanism of self-regulation. This multi component, cluster-randomized efficacy trial involved 35 Head Start-funded classrooms (602 children). Results support curriculums that target children's self-regulation skills through classroom-based processes due to significant pre-academic benefits observed in the sample population. These findings lend support to claims made in previous studies related to the importance of social, emotional and behavioral experiences to young children's early and long-term learning.

## B. Professional Newsletter/Magazines

Just Added

Bodrova, E. & Leong, D. (2008, March). Developing Self-Regulation in Kindergarten: Can we keep all the crickets in the basket?. *Beyond the Journal: Young Children on the Web*, National Association for the Education of Young Children. 21, 1-3. Retrieved from [www.journal.naeyc.org](http://www.journal.naeyc.org).

*Comment:* This article discusses the importance of addressing emotional and cognitive self-regulation in kindergarten and emphasizes that learning self-regulation in the early years deserves more attention than academic subjects. While the authors do not include the foundational biological self-regulation (that on which the Alert Program® focuses), the importance of including self-regulation as a core skill for learning is presented.

Just Added

Center on the Developing Child at Harvard University. ( ). InBrief: Executive function: Skills for life and learning. Retrieved from <http://developingchild.harvard.edu/resources/inbrief-executive-function-skills-for-life-and-learning/>

*Comment:* This is one of a series of brief summaries of findings related to the development of executive function and self-regulation in young children. The importance of early experiences in shaping foundational skills for executive function and the resultant influence of these skills to learning and a healthy and productive life is summarized. Support for expanded training of teachers and implications for policy development are presented.

## C. Books/Manuscripts/Professional Texts

Just Added

Zelazo, P.D., Blair, C.B., and Willoughby, M.T. (2016). *Executive function: Implications for education*. (NCER 2017-2000) Washington, DC: National Center for Education Research, Institute of Education Sciences, U.S. Department of Education. Retrieved from <http://ies.ed.gov/>

*Comment:* This paper provides an overview of recent research of executive function (attention-regulation skills) and explores the implications of this research for educational practice and research.

## SECTION IV

## Select Articles on Self-Regulation Assessments / Issues

Boekaerts, MM. & Corno, L. (2005). Self-regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology: An International Review*, 54(2), 199-231.

*Comment:* This article presents an overview of various conceptualizations of self-regulation (SR) that exist in the educational psychology research literature and also reviews the types of instruments that have been constructed to measure how well students self-regulate. Intervention programs and their effectiveness are discussed from the educational psychology frame of reference. While educational psychologists typically approach SR from a predominantly cortical level, this article provides useful insights into this perspective supporting more successful communication in an educational environment. In other words, the sensory-motor self-regulation domain (such as the Alert Program® approach) is not addressed but assessment tools presented that measure volition and social-emotional levels might prove useful for evaluating outcomes of interventions that focus on most any level of CNS processing.

Just Added

Cohn, E.S., DeMarninis, J.A. (2016). Demonstrating the value of sensory integration approaches by addressing and measuring outcomes that matter to families. *OT Practice*, 21(17), CE 1-8.

*Comment:* This article summarizes a review of the literature that focuses on outcomes of interest in recent SI studies and to describe how these outcomes were operationalized and measured. The article begins by describing concerns and expected outcomes of children and families as a vital component when measuring effectiveness using sensory integration (SI) approaches. Studies conducted between 2007 and 2015 that examined intervention, using SI and sensory-based approaches, are examined in order to classify the outcomes measured and to compare the measures with issues parents find most important. Of significance, this review indicates that parents value skill development, self-regulation, perceived competence and social participation for their children. The article concludes with a list of selected assessments that measure outcomes that are congruent with child and family concerns, of which self-regulation is a primary component. This article provides valuable information supportive of practitioners tracking the success of their use of the Alert Program® in addressing self-regulation.

Just Added

DeBoth, K., Benevides, T., Lane, S., & Reynolds, S. (2015, December). Using physiological measurements in sensory processing and integration research. *Sensory Integration Special Interest Section Quarterly*, 38(4), 1-4.

*Comment:* This article is of interest to researchers investigating sensory concepts and processing, as well as practitioners who wish to consume and understand research in this area. The article reviews physiological measurements frequently used to examine sensory processing and the adaptive capacity of the central nervous system in adjusting and coping with change or stress.

Just Added

Hedman, E.B. (2010). In-situ measurement of electrodermal activity during occupational therapy. Unpublished master's thesis, Massachusetts Institute of Technology. Cambridge, Massachusetts. (contact: [hedman@media.mit.edu](mailto:hedman@media.mit.edu)).

*Comment:* Using iCalm, a wireless sensor developed at MIT to measure electrodermal activity (EDA) and motions, 22 children (ages 3-10) with clinical diagnosis of Sensory Processing Disorder, participated in a study to analyze their physiological arousal in response to therapeutic activities during occupational therapy. This study suggest that use of the iCalm as a physiological evaluation tool, in addition to careful case-study analyses of resultant data may positively inform clinical practice and outcomes.

Just Added

Hedman, E., Miller, L., Schoen, S., Nielsen, D., Goodwin, M, & Picard, R. (2012). Measuring autonomic arousal during therapy. *Proceedings of 8<sup>th</sup> International Design and Emotion Conference*. London, UK.

Comment: This article describes how a newly developed and validated measurement system, iCalm, may be used to more effectively inform therapists as to the child's physiological arousal in response to therapeutic intervention. In addition to demonstrating an effective evaluation tool, the resultant data supports the importance of understanding each individual's unique perception to therapy and subsequent emotional response. In other words, what may affect one individual with a high arousal may well affect another with a low arousal.

Just Added

Reynolds, S., Glennon, T.J., Ausderau, K., Bendixen, R.M., Kuhaneck, H.M., Pfeiffer, B., Watling, R., Wilkinson, K., & Bodison, S.C. (2017). Using a multifaceted approach to working with children who have differences in sensory processing and integration. *American Journal of Occupational Therapy*

Comment: This article presents a framework for conceptualizing interventions for children with varied sensory processing and integration issues. It advocates that practitioners use a multi-faceted approach in contrast to the misconceived notion that the Ayres Sensory Integration (ASI) approach is the only approach that can and should be used with this population. Bodison et al. (in press) categorized a multifaceted approach into three broad areas of intervention: 1) environmental supports and adaptations; 2) caregiver-focused interventions, and 3) child-focused, therapist led interventions. All three areas of described with examples provided with pros and cons discussed. The profession is encouraged to develop evaluation tools and engage in research to support clinical decision-making with regards to the multi-faceted approach. The Alert Program® is cited as a therapist-led sensory-based approach that incorporates SI theory constructs with other types of intervention practices.



## SECTION V

## Select Articles on the Theory of Sensory Integration

American Occupational Therapy Association (n.d.) *Essay: The current status of sensory integration therapy*. Retrieved from <http://www.aota.org/Practice/Children-Youth/SI/Resources.aspx#sthash.gD37Xy8a.dpuf>

Comment: Florence Clark, President of AOTA presents her perspectives on the role of Sensory Integration Therapy (SIT) as an intervention approach for occupational therapists. Despite the continuing challenges and criticisms (while unjustified), she provides rationale for her belief that SIT will continue to be supported as an important intervention treatment option.

American Occupational Therapy Association (n.d.). *AOTA critically appraised topics and papers series: What is the neurophysiologic evidence that using a sensory-based approach in occupational therapy with children and adolescents will be effective?* Retrieved from <http://www.aota.org/Educate/Research/CATsandCAPs/SI.aspx>

Comment: As part of AOTA's Evidence-Based Literature Review Project, this Critically Analyzed Topic (CAT) provides a synthesis of a group of related articles. This particular CAT focuses on neurophysiologic evidence on the effectiveness of using a sensory-based approach in OT with children and adolescents. The studies analyzed provide "direct and robust support of neuroplasticity in many brain regions and that sensory input is an important mediator for this plasticity. Ayres's (1972) original premise that sensory motor activity provides a foundation of learning is supported.

American Occupational Therapy Association (n.d.). *AOTA critically appraised topics and papers series: What is the evidence for the existence of different types of sensory processing/sensory integration problems in children and adolescents?* Retrieved from <http://www.aota.org/Educate/Research/CATsandCAPs/SI.aspx>

Comment: As part of AOTA's Evidence-Based Literature Review Project, this Critically Analyzed Topic (CAT) provides a synthesis of a group of related articles. This particular CAT focuses on the evidence of different types of sensory processing/sensory integration problems in children and adolescents. Articles included in this synthesis were divided by type of disability: autism/Asperger's disorder; attention-deficit/hyperactivity disorder; developmental coordination disorder; learning disorders; and other disorders (such as Fragile X Syndrome). Few studies have directly tested whether children and adolescents with sensory integration dysfunction/sensory processing disorders can be classified into subtypes. However, the research provides some support to suggest that subtypes exist and treatment strategies may need to vary depending upon the type. Research also highlights the importance of a *complete* assessment of sensory processing abilities due to variations of abilities with different diagnoses.

Franklin, Laureen, Deitz, Jean, Jirikowic, Tracy, Astley, Susan (2008). Children with Fetal Alcohol Spectrum Disorders: Problem Behaviors and Sensory Processing. *The American Journal of Occupational Therapy* 62, 265-273

Comment: Results provide evidence that children with FASD demonstrate problem behaviors and sensory-processing impairments as reported by parents and that sensory-processing deficits co-occur with problem behaviors at a high rate in this population. This finding suggests that deficits in sensory processing may affect the ability of children with FASD to respond adaptively to their environments.

Koomar, J. A., (2009, December). Trauma-and attachment-informed sensory integration assessment and intervention. *Sensory Integration Special Interest Section Quarterly*, 32(4), 2.

Comment: Highlights the importance of identifying and differentiating the root causes of over-arousal and shutdown.

Kinnealey, M., Koenig, K.P., & Elchelberger Huecker, G. (1999). Changes in special needs children following intensive short-term intervention. *The Journal of Developmental and Learning Disabilities*. 3, 85-103.

Comment: This study explored changes in neuro-motor functioning, behaviors, and sensory modulation of children with special needs following a week-long camp program (intensive model) focused on improving sensory integrative functioning. The program was effective in reducing soft-neurological signs, extremes of behaviors and behaviors associated with ADD.

May-Benson, T.A. & Koomar, J.A. (2010) Systematic review of the research evidence examining the effectiveness of interventions using a sensory integrative approach for children. *American Journal of Occupational Therapy*, 64, 403-414.

Comment: This article provides a systematic review and analysis of 27 studies related to the effectiveness of sensory integration (SI) intervention on the ability of children to engage in daily occupations and to apply these findings to occupational therapy practice. Results of the review suggest that the SI approach may result in positive outcomes in multiple areas identified.

Miller, L.J., Coll, J.R., & Schoen, S.A. (2007). A randomized controlled pilot study of the effectiveness of occupational therapy for children with sensory modulation disorder. *American Journal of Occupational Therapy*, 61, 228-238.

Comment: The study evaluated the effectiveness of three treatment groups of children with sensory modulation disorders. Findings suggest that OT-SI may be effective in treating children with sensory modulation disorders. The article addresses the complex conceptual and methodological issues related to researching this area of practice.

Just Added

Parham, L.D., Roley, S.S., May-Benson, T.A., Koomar, J., Brett-Greem, B., Burke, J.P., et al. (2011). Development of a fidelity measure for research on the effectiveness of the Ayres Sensory Integration<sup>®</sup> intervention. *American Journal of Occupational Therapy*, 65, 133-142.

Comment: This is a valuable article outlining the fidelity measures that were evaluated for validity and reliability. Fidelity refers to the extent to which the intervention delivered is true to the underlying therapeutic principles on which it is based. Fidelity guides a systematic analysis of intervention and provides a standard for determining whether an intervention approach is true to Ayres Sensory Integration (ASI). The article provides guidelines for researchers wanting to study the effectiveness of ASI.

Wilbarger, J., Stackhouse, T.M. Sensory modulation: A review of the literature.  
Retrieved from [www.OT-Innovations.com/content/view/29/58/](http://www.OT-Innovations.com/content/view/29/58/)

Comment: A 2007 brief literature review of the concept of sensory modulation within the field of occupational therapy. Provides contributions of occupational therapy professionals in operationalizing the concept of sensory modulation.

## SECTION VI

### Websites that Provide Additional Support and References

[www.AOTA.org](http://www.AOTA.org)

*Comment:* This PowerPoint presentation, titled *Recess: An Important school routine* (2013) is provided by AOTA as a resource to practitioners, advocates for the role of OT in promoting recess to support learning and social-emotional development/health. *Membership required for access.*

[www.bccfa-seed.org](http://www.bccfa-seed.org)

*Comment:* Shares fact sheets and information related to social emotional enhancement.

[www.CanChild.ca](http://www.CanChild.ca)

*Comment:* The McMaster University Centre for childhood Disability Research has an entire section on Sensory Integration with extensive references.

[www.classroomseatingsolutions.com](http://www.classroomseatingsolutions.com)

*Comment:* Focuses on the sales of seating and standing desk options for students in the classroom.

[www.missjaimeot.com/10-simple-fidgets-from-the-dollar-tore/](http://www.missjaimeot.com/10-simple-fidgets-from-the-dollar-tore/)

*Comment:* Resources related to sensory-motor information and activities designed specifically to help parents.

[www.OT-Innovations.com](http://www.OT-Innovations.com)

*Comment:* Tina Champagne's website has a large amount of research and resources, including how to set up a sensory room, sensory diet handouts, and other valuable information.

[www.pinterest.com/thesugaraunts/sensory-activities/](http://www.pinterest.com/thesugaraunts/sensory-activities/)

*Comment:* Includes numerous sensory-motor resources and sample activity ideas

[www.SensoryConnectionProgram.com](http://www.SensoryConnectionProgram.com)

*Comment:* This is a compilation of references and resources generated by Karen Moore and available on her website. The materials are directed with adults in mind but many have age-span possibilities.

[www.SPDFoundation.net](http://www.SPDFoundation.net)

*Comment:* Sensory Processing Foundation provides research, education and advocacy around issues related to sensory processing disorder. The on-line "library" allows access to relevant published literature.

[www.standupkids.org/movement-learning/](http://www.standupkids.org/movement-learning/)

*Comment:* Shares information about activity level and it's relationship to health and learning.

[www.TheSpiralFoundation.org](http://www.TheSpiralFoundation.org)

*Comment:* The Spiral Foundation of OTA Watertown is dedicated to helping children with sensory integration dysfunction lead full and productive lives. Their research section provides research related to the sensory processing.